Pit and Quarry

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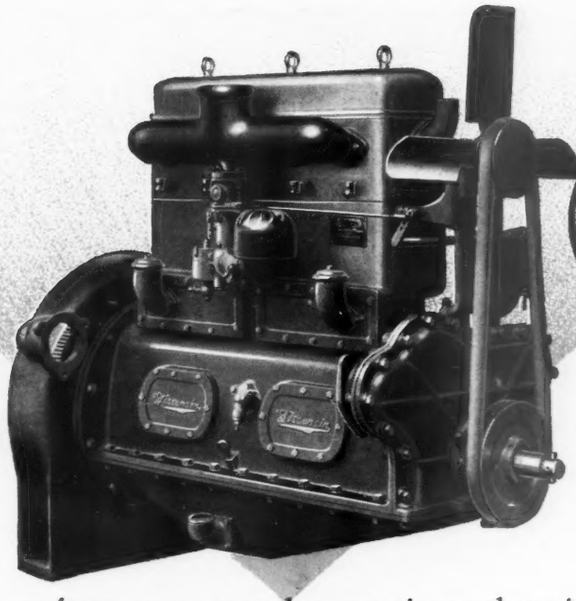
Reaches Largest Number of Plants

Vol. XIX | JANUARY 1, 1930 | No. 7



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Crushed Stone Plant in Northwestern Ohio Has Several Interesting Features

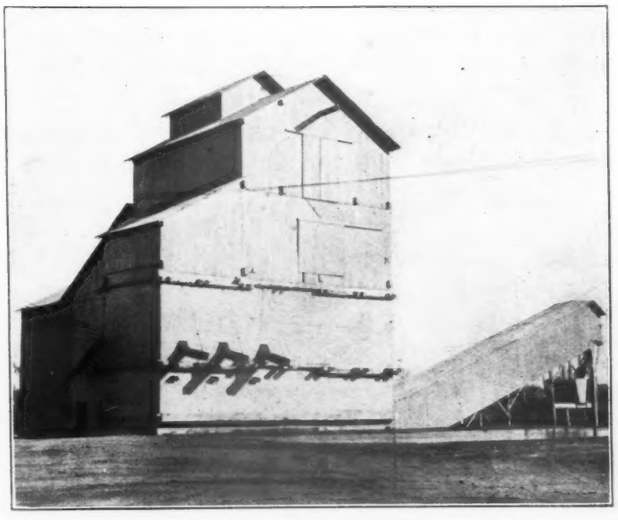
Unusual Arrangement of Crushers and Screens Allows Production of Wide Range of Sizes

By W. E. TRAUFFER

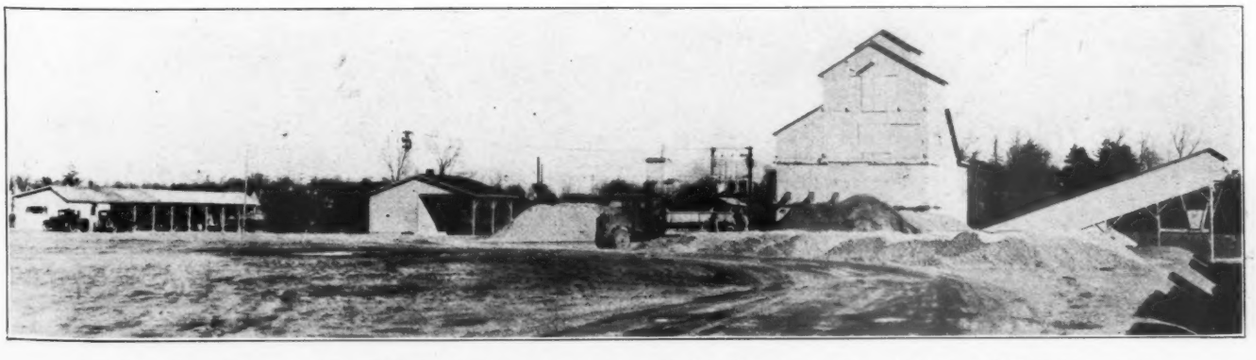
THE Delphos Quarry, Inc., of Delphos, Ohio, operates a crushed-stone plant a mile southwest of that town which is of sound design and has a number of interesting features. It is a small but efficient plant, with a capacity of 80 tons per hour, and can easily be enlarged to give a greater capacity. The plant went into operation in 1924 and has necessitatd only a few minor changes since that time. The steam shovel used for stripping is the only piece of equipment used which is not electrically operated.

The property consists of about 15 acres of which 3 acres is being quarried at present. The deposit is the regular Lima dolomite, fairly hard and massive near the surface but somewhat stratified deeper down. The overburden, averaging about 6 ft. deep is removed by a Marion Model 21 steam shovel with a ¾-cu. yd. dipper. This loads into trucks which haul to an abandoned section of the quarry.

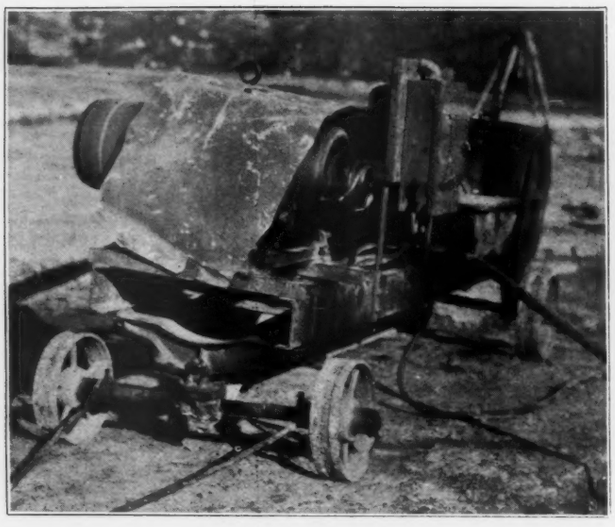
The quarry is being worked to a depth of about 60 ft. Blasthole drilling the height of the face is done by a Loomis Clipper electric well-drill using a 5-in. bit. Blasting is done with single-row bank shots and sometimes staggered double rows. Du



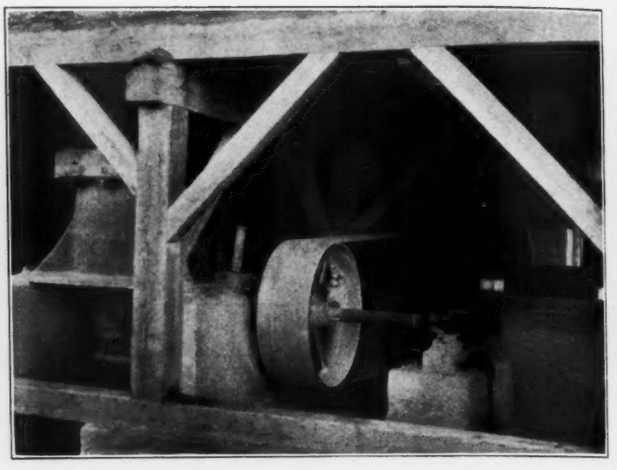
Plant from southwest with loading conveyor at right



Entire plant from south. Office and garage at extreme left, shipping and weighing building in center



Electric portable compressor which furnishes air for jackhammers



Primary crusher with elevator and hoist in right background

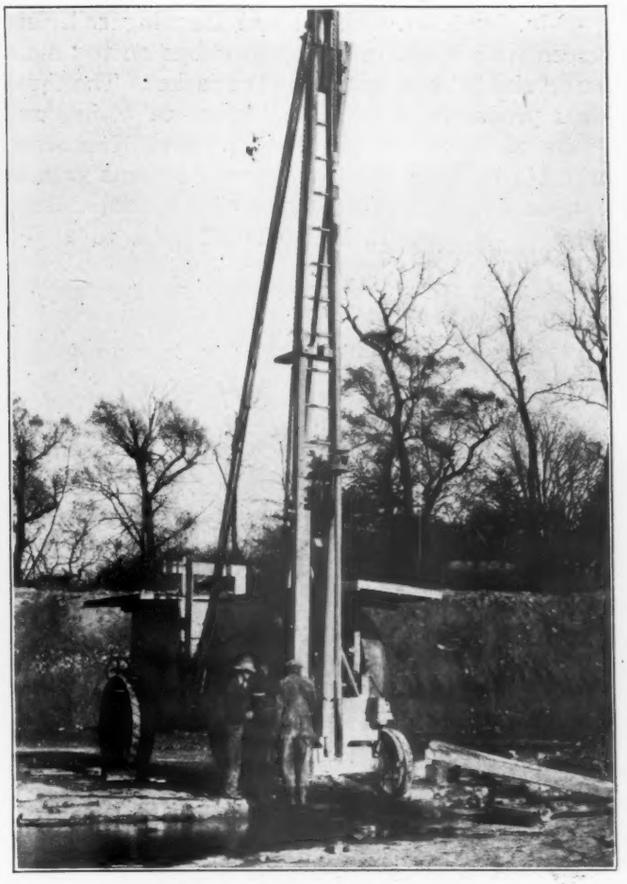
Pont and Hercules 60 per cent gelatin and Cordeau-Bickford safety fuse are used. Due to the massive formation near the surface, considerable secondary blasting is necessary. Drilling for this is done with a Hardsocg Type 8 lightweight jackhammer drill. Air at 35-lb. pressure is furnished by a Schramm 5-in. by 5-in. portable electrically-driven air compressor.

A Marion Type 7 electric crawler shovel with a ⅞-cu. yd. dipper loads the stone into a Watt 4-cu. yd. end-dump Timken-bearing car. This is hauled by cable up an incline to the plant. The proximity of the quarry to the plant was used to advantage when this incline was built, and the usual double haul method used in most quarries was eliminated. The track has a grade of about 5 per cent in the quarry allowing spotting of the car alongside the shovel by gravity. Six hundred feet of Williamsport cable is used.

The car dumps into the 16-in. Traylor gyratory primary crusher. This is belt-driven from a line-shaft which is driven through a Dayton Cog belt

Looking into quarry from south. Loading shovel, and jackhammer in foreground; well drill, compressor and stripping shovel above

Drilling some of the larger blocks of stone for secondary blasting

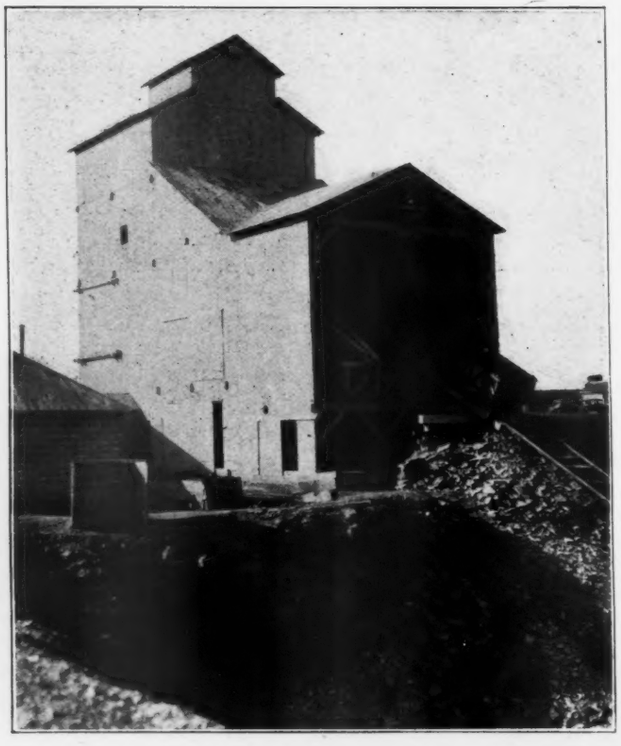


Well drill in position to start a new hole

by a 125-hp. Ideal slip-ring motor. This also drives the double-friction single-drum hoist. The crusher discharges into a 24-in. Webster chain pan elevator on 31-ft. centers which discharges onto a 2-in. bar grizzly. The oversize goes to a 10-in. Allis-Chalmers McCully gyratory secondary crusher. This crusher discharges, along with the material passing through the grizzly, to a 24-in. Webster chain pan elevator on 60-ft. centers. This feeds through a split chute to two 40-in. by 12-ft. Galland and Henning rollerless revolving screens. These have 1½-in. round perforations on the main barrel and jackets with ¾-in. square perforations. The ¾-in. to 1½-in. material can go directly to the bins or all over ¾-in. can go to a Symons cone crusher for recrushing. This discharges into the 60-ft. elevator previously described which feeds the two primary screens. The material under ¾-in. goes to

Plant from quarry side showing car coming down incline. Machine shop and loading conveyor at left; office at right

a 40-in. by 18-ft. Galland and Henning rollerless screen with ½-in. round perforations on the main barrel and 3/16-in. square on the jacket. The three sizes produced—0 to ¼-in., ¼-in. to ½-in., and ½-in. to ¾-in.—all go direct to bins. The stone over 1½-in. from the two primary screens goes to a 32-in. by 10-ft. Allis-Chalmers revolving screen with 2½-in. perforations. The 1½-in. to 2½-in

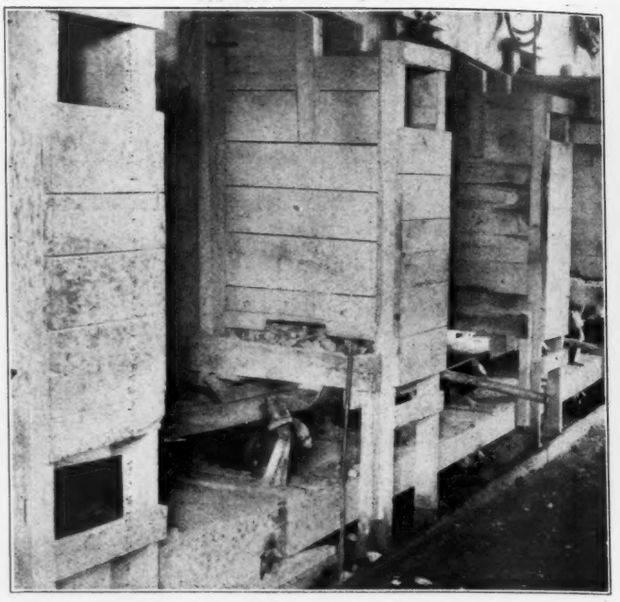


Closeup of plant showing car coming down incline after discharging to crusher

stone goes to the bins while that over 2½-in. is recrushed in the same Symons cone crusher previously described.

The Symons cone crusher, the 10-in. Allis-Chalmers secondary crusher and the 31-ft. elevator are all belt-driven from a line shaft by a 75-hp. General Electric motor. The 60-ft. elevator, the two primary Galland and Henning screens and the Allis-Chalmers screen are belt-driven from a line shaft driven by a 50-hp. Wagner motor. The third Galland and Henning screen is driven by a 10-hp. Wagner motor.

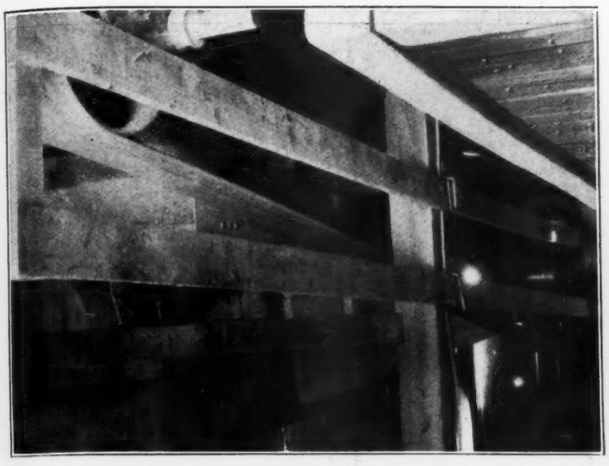
The six 70-ton capacity wooden bins are in one row. They can discharge through side drop-chutes into trucks or through sliding gates and boxes onto a Webster loading conveyor to railroad cars. These gates are arranged so that any one size or mixed sizes can be loaded as desired. The conveyor, which is 20 in. wide and on 125-ft. centers, runs horizontally under the bins and on an 18 deg. slope at the loading end which is enclosed in a wood-frame housing. United States Rubber Company belting is used on this conveyor which is driven by a 10-hp. Wagner motor.



Feed from bins onto loading conveyor

Most of the product is shipped by rail over the Cleveland to St. Louis branch of the Nickel Plate railway. Some is delivered for local use in two Gramm-Bernstein trucks, of 1½-ton and 3-ton capacities respectively, which are owned by the company. Most of the output is used for build-

The roller bucket elevator which takes stone from primary crusher to bar grizzly



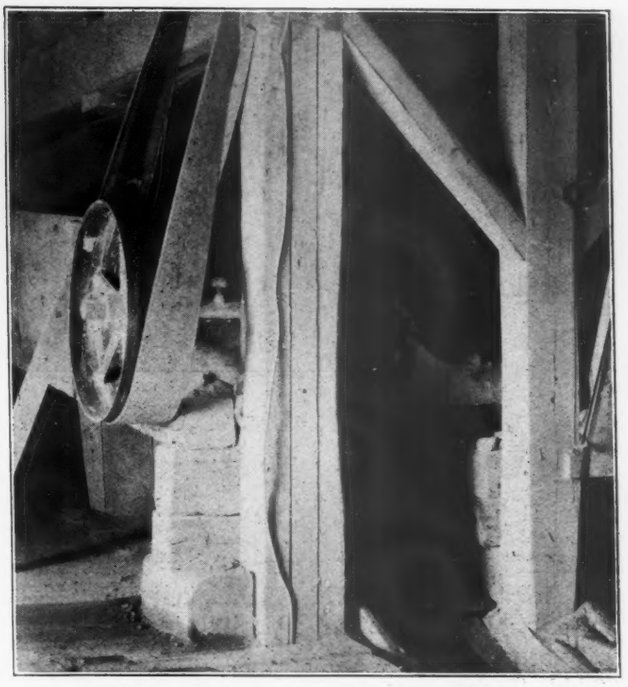
One of the rollerless main sizing screens

ing construction, top dressing for roadways and for railroad ballast.

Power is reduced at the plant substation from 2,300 volts to 220 volts for use in all plant and quarry operations. A Weiman ball-bearing centrifugal pump in a small building in one corner of the quarry drains into a nearby creek. This pump has a 6-in. suction and 5-in. discharge and is driven by a 20-hp. Wagner motor.

The plant was designed and built by the company's own forces and is of wood-frame construction with concrete foundations. The plant office is a neat frame building which has an extension providing covered parking space for 9 cars. Another neat frame building houses the shipping office. It contains a Fairbanks 20-ton capacity beam truck scale and racks for bolts and small parts. A concrete block blacksmith shop contains equipment for general repair work and a complete set of tools on a neat rack. The plant is equipped with ample lighting facilities which were necessary as it was operated 18 hours per day during the entire summer. W. R. France is president and treasurer. Viola J. Auer is secretary and Frank Spieles is superintendent.

Feed to the primary gyratory crusher



One of the smaller sizing screens

Atlas Stockholders Ratify Plan To Merge With U. S. Steel

At a special meeting of stockholders of the Atlas Portland Cement Company, held December 28, at which more than 90 per cent of the outstanding shares were represented, the agreement for the absorption of the company by the U. S. Steel Corporation was ratified and approved.

As soon as the 899,211 shares of Atlas stock are exchanged for approximately 180,000 shares of U. S. Steel, the merger will be complete and the Atlas Company and the Universal Portland Cement Company, cement subsidiary of the steel corporation, will combine operations. U. S. Steel, it is reported, is to make application to the New York stock exchange for listing the 180,000 shares.

The exchange, on the basis of five shares of Atlas for one of U. S. Steel, is about in line with current prices. Steel common has been selling around 165, while Atlas has been quoted around 33 on the New York curb.

While the dividend return to former Atlas stockholders will be slightly lowered, the merger will have an important effect toward stabilization of conditions in the cement industry, leaders believe.

Shells and Clay are Raw Materials at Trinity Cement Plant

Raw Materials for 2,000-Barrel Plant Are Received By Barge

By T. K. KNOX
Mining Engineer, Dallas, Tex.

TWENTY years ago cement production in Texas was about 500,000 bbl. annually. Today, the production capacity, including recently constructed plants, is approximately 8,000,000 bbl. Texas possesses an abundance of material for the manufacture of portland cement in the great limestone areas covering the Black Lands, the Grand Prairie and Edwards Plateau, large portions of the middle-western area and in the Trans-Pecos. In the geological province, known in Texas as the Coastal Plain, there is no limestone. However, at Houston, there are two plants which utilize shell and clay taken from shallow bays in the Gulf. Other plants in the state are two each at Dallas and San Antonio and one plant each in Fort Worth, El Paso and Waco.

Crane at the clay deposit

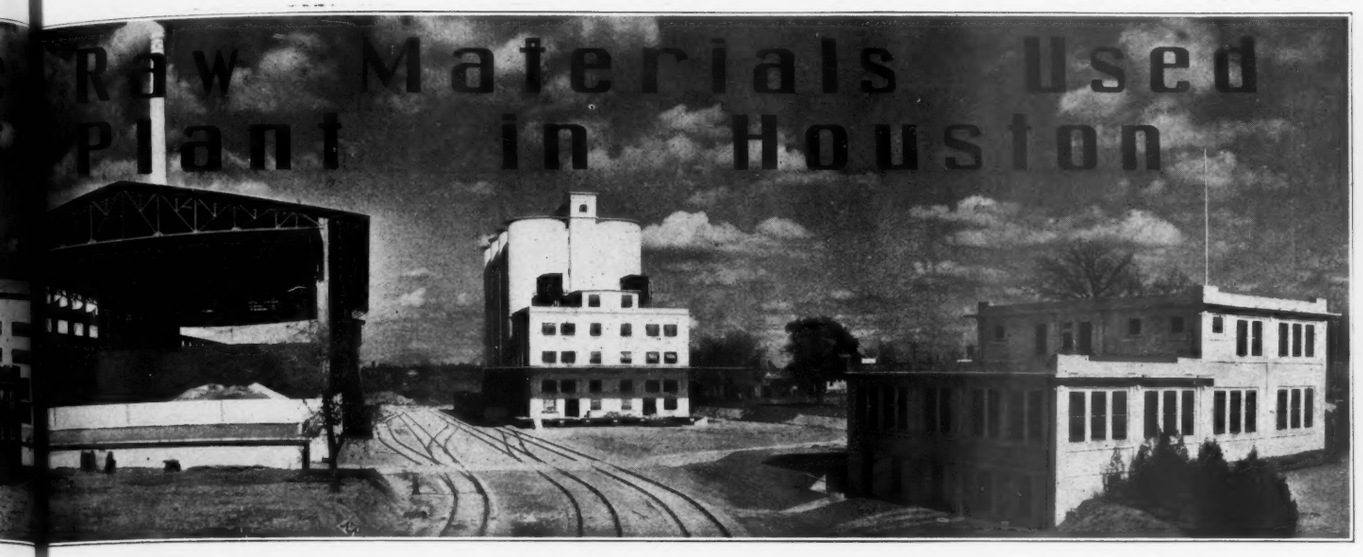
Typical of the growth of the industry in Texas, and illustrative of it, is the Trinity Portland Cement Company. Not only in production increase does this company typify the Texas cement industry. Its engineering and chemical practices and the technique in which this company has an enviable record in the cement industry are well advanced.

Operate Three Plants

The company has three plants located in three geological provinces of Texas with a combined production of approximately 10,000 bbl. daily. The plants are located in Dallas, Fort Worth and Houston. The general offices are at Dallas. Two of them are hard rock plants and the other uses shells and clay. One is a dry process plant and two plants use the wet process. It has one of the oldest plants in the southwest and two of the newest and best designed in the industry. In the writers' opinion the Trinity Portland Cement Company provides not only a good crosssection and summary of the cement industry in Texas, but is representative of the entire industry.

The executive officers of the company need no introduction in the industry, as they are well and favorably known. W. H. L. McCourtie is president; C. E. Ulrickson, vice-president and general manager; O. V. Bartholomew, general superintendent; Frank G. Ray, secretary; M. J. Scanlon, treasurer; and J. J. Horgan, general purchasing agent.

The details of each plant will be described separately because there is so much that is new, interesting and individual at each plant that a general description of the three might overlook many



vital construction and operating features that are interesting to the cement industry. The remainder of the present article deals with the Houston plant. The Dallas and Fort Worth plants will be described in the next issue of PIT AND QUARRY.

The Houston Plant

Architectural symmetry without sacrifice of operating efficiency; compactness without surrender of room for expansion; the most modern trend of cement plant design and construction, yet in no way an experiment, these features briefly apply to the Houston plant.

The nearness to the location of the market of the finished product is of primary importance. Houston, a city of approximately 300,000 population and an inland seaport having access to the Gulf by a ship channel, affords an excellent market for the finished product. Houston is the distributing center for many large towns in the surrounding area, besides being the shipping point to the Atlantic seaboard.

The plant is located almost in the heart of Houston. Situated on the ship channel, the approach by land from the business district of the city is by Navigation Boulevard. The plant is set back from the boulevard a considerable distance and provided with a wide concrete driveway. Entrance is through the Trinity arch, a counterpart of which is found at the entrances of all of the company's plants. Landscape gardening not only enhances the beauty of the grounds but adds much to the general plant surroundings.

Raw Material

One is accustomed to see and associate quarries with cement plants. The absence of a quarry at this plant is explained by the utilization of shells which provide the calcium content and of clay containing silica and alumina. Both the shells and the clay are transported to the plant by barges. Shells are dredged from reefs in Galveston Bay about 55 mi. from the plant, the loaded barges being towed to the plant through the ship channel. The shells are washed over screens to remove the sand in dredging for gravel.

An analysis of the shells is as follows:

Lime — Ca CO_3 — 98.2 per cent
Alumina — Al_2O_3 — 0.6 per cent
Silica — Si O_2 — 1.0 per cent

Clay is obtained from a deposit about 19 mi. down the ship channel. It is dug by a Northwestern crane powered by an electric motor. The crane is on a barge, and has a 1¼-cu. yd. orange peel bucket which swings on a 50-ft. boom.

Unloading Basin for Raw Material

A large offset or basin, excavated in the side of the channel of the bayou next to the plant, accommodates the loaded barges and tugs. The construction of the unloading dock was a huge undertaking.

Barge-loads of shell and clay at dock in basin

Shell storage in foreground, craneway, and mud-storage tanks

It accommodates seven or eight barges at one time. Each barge is 100 ft. long by 50 ft wide, is of the flush-deck type and holds from 300 to 500 cu. yd. of material.

On the mill side of the dock a concrete roadway provides a runway for an American Hoist and Derrick Company electric crane. This crane has crawler treads and a 60-ft. boom and is equipped with a 3-cu. yd. Hayward bucket. The crane handles the raw material from the barges to the storage. An Orton Crane and Shovel Company crane, with a 1-cu. yd. bucket, also is used at times for unloading.

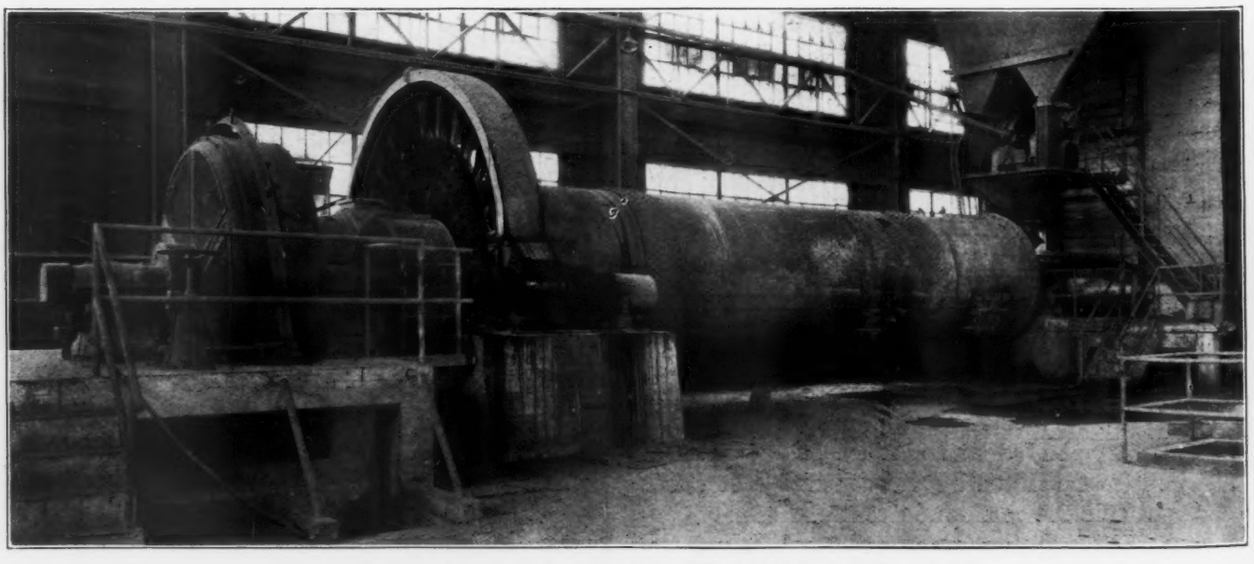
Clay from the barges, as unloaded, is dumped directly into the hopper of the clay wash mill, situated on the dock. The wash mill is 26 ft. in diameter and is of Allis-Chalmers make. Stone and trash are taken out by ordinary toothed drags which also breaks up the lumps. Enough water is added to make a good mixture for pumping.

The shells are unloaded by the cranes directly into the shell storage which extends to the dock. A 23,000-lb. Pawling and Harnischfeger electric traveling crane, equipped with a 4½-cu. yd. Hayward bucket, handles the shells to the hopper of the raw grinding mills.

Gypsum is dumped from railroad cars into a chute, from which an elevator takes it to the first gypsum storage silo; thence it is handled by the crane to the other gypsum silos or to the hopper of the finish grinding mill.

The Craneway

The craneway and open storage pit below are 100 ft. wide and extend 665 ft., the entire length of the plant. The shell storage is located at one end of the pit, while the other end is used for clinker storage. The grinding mill is located midway between the clinker storage and the shell storage and is roofed over. The shell storage pit be-



One of the tube mills with its supersynchronous motor

The kiln viewed from the firing end

neath the craneway has concrete walls 20 ft. high, which also form the foundation for the steel construction supporting the craneway.

The clay-storage and gypsum storage tanks are located under the craneway, with enough clearance overhead to allow the crane to transport loads over them. The clay-storage tanks form a partition between the shell storage and the grinding mill, while the gypsum-storage tanks similarly separate the clinker storage from the grinding mill. The gypsum-storage and clay-storage tanks, being located conveniently in this way, form one of the many economic construction features of this plant.

Clay Handling and Blending

The Allis-Chalmers wash mill, already mentioned, is driven by a 75-hp. General Electric motor through an Allis-Chalmers Texrope drive. The drive of the washer and the pumps that handle the clay to the slurry tanks are housed in a separate building adjacent to the wash mill.

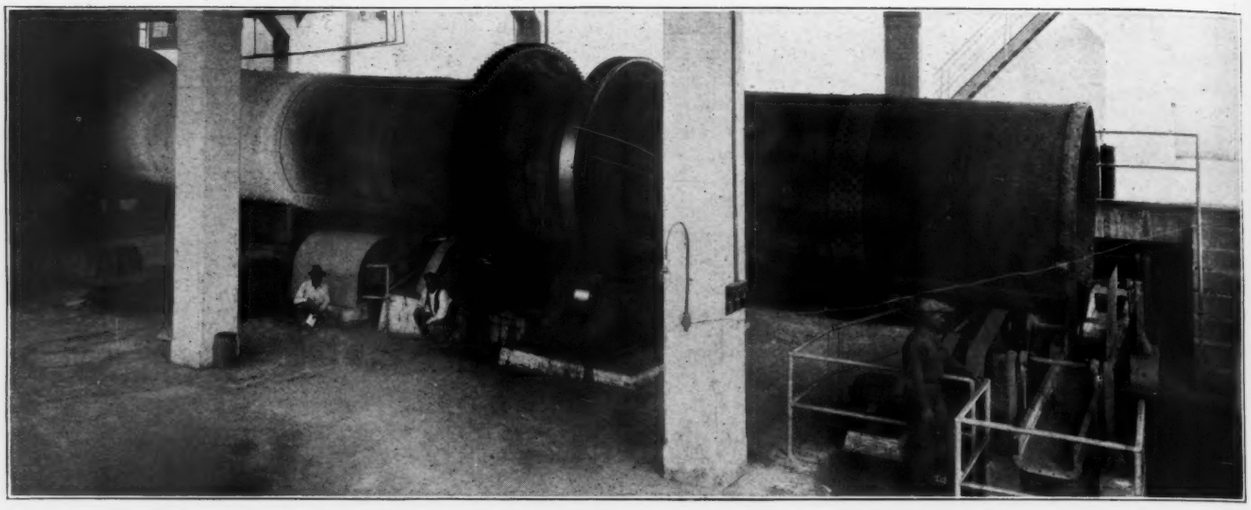
Two 3-in. Morris pumps, each driven by a 30-hp. General Electric motor, force the mud to the clay storage tanks which are about 400 ft. from the pumps.

There are four clay storage tanks, each 25 ft. in diam. and 50 ft. high. The tanks are fitted with agitating paddles. Two 2-in. Morris pumps are used to further agitate and blend the clay by drawing off from one tank and pumping into another. It is more difficult to blend the clay correctly than it is the shells, which are quite uniform.

The Grinding Mills

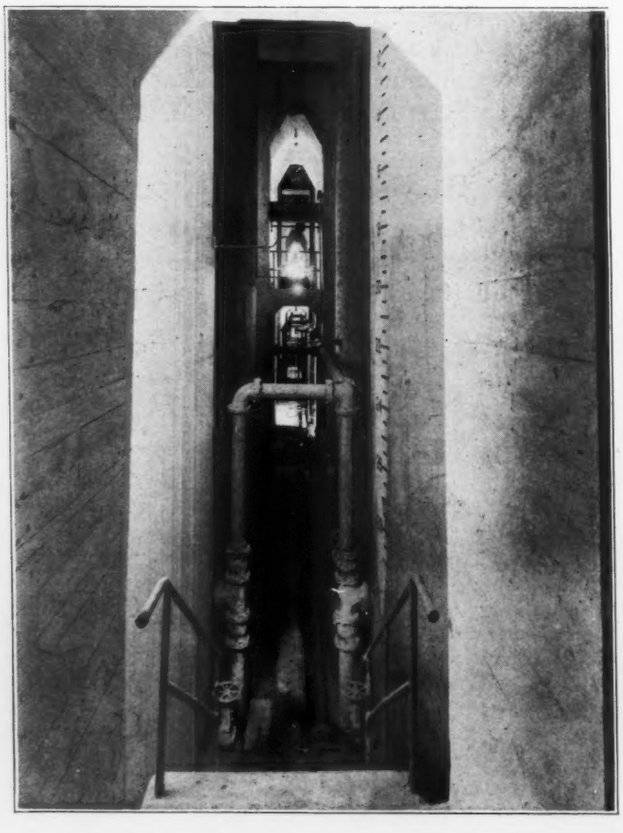
The grinding mills are located in a room below the craneway, as explained. The room is 165 ft. by 100 ft. in size and well

Cement storage silos, shell storage, and craneway



Rotary cooler beneath the kiln, showing discharge to reciprocating conveyor

lighted. The walls of the building are between 40 and 50 ft. high. There is room for the ultimate installation of 8 mills in this building without crowding. At present, however, there are only three mills in the structure, two raw mills and one finishing mill. All are Traylor 3-compartment tube mills, each 8 ft. in diam. by 40 ft. in length and driven by a 900-hp. General Electric super-synchronous motor through a Traylor flexible coupling. These motors have ample starting torque with high operating economy throughout their normal operating loads.

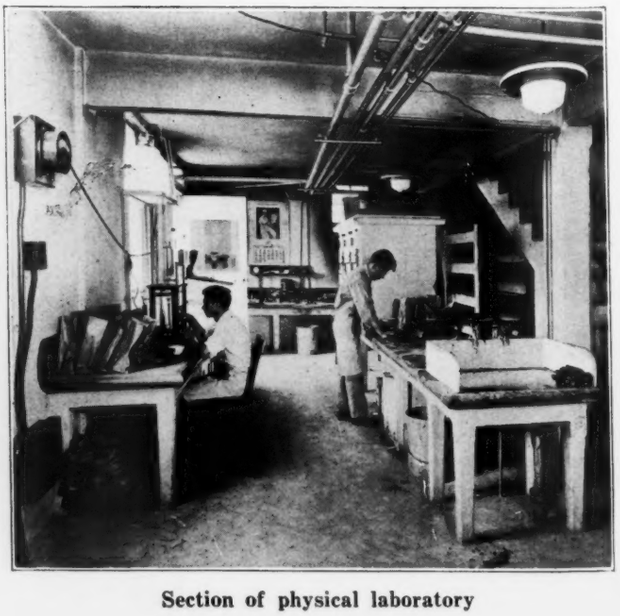


View between slurry tanks and concrete columns that support the kiln. The pipes handle slurry

One of the mills is fed by a Bartholomew feeder, while two are fed by Smidth table feeders. The feeder ends of the two raw-grinding mills face the shell storage and clay tanks, while that of the finishing mill faces the clinker and gypsum storage.

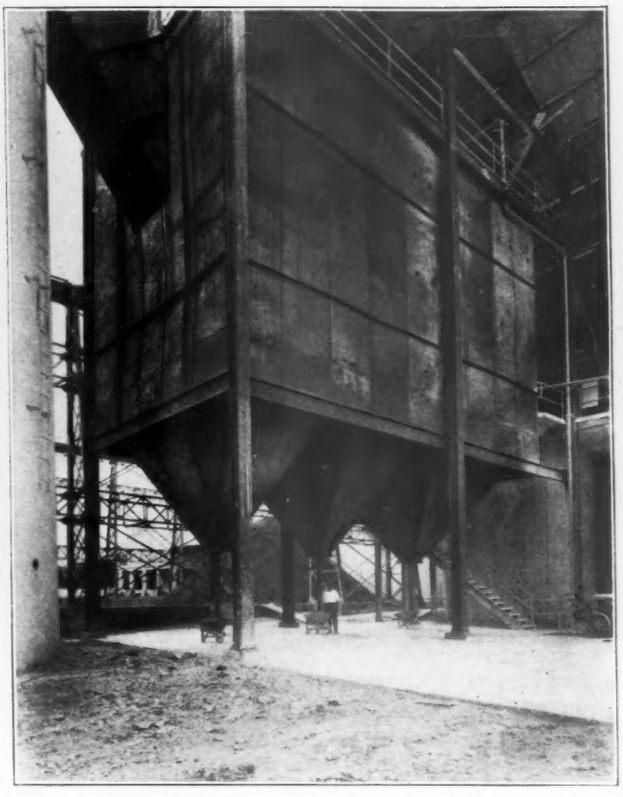
Clay is pumped into the feeder, the feed of the clay being controlled from the laboratory. A unique feature of this plant, as in other shell plants, is that the slurry is kept higher in water content than in hard rock plants. However, this is only a matter of comparison, for some slurries will flow and handle easily with a certain percentage of water, while others, made from different materials and using the same water content, would almost require shoveling. This plant is handling the slurry with as small an amount of water as possible, probably less than most shell plants use. Greater fuel economy is thus achieved, less water having to be evaporated out of the slurry.

The slurry from the raw mills drains by gravity to a channel that is flush with the floor. In this



Section of physical laboratory

Portion of chemical laboratory



Dust collecting chambers between the kiln and the stack

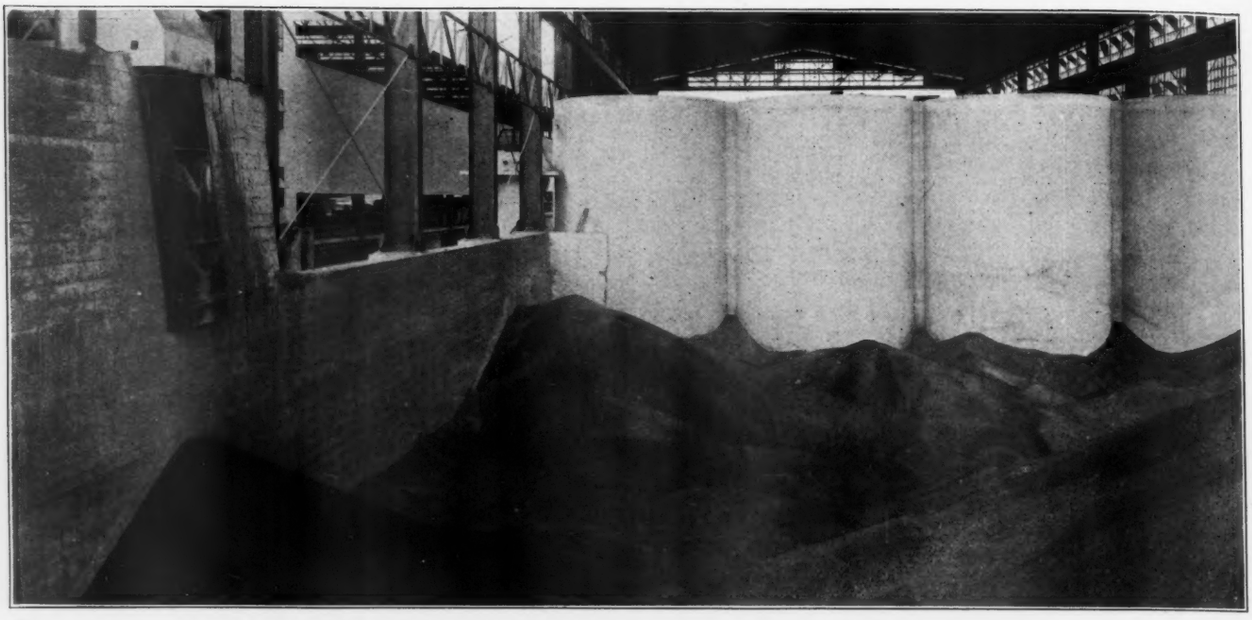
channel, a screw conveyor carries the slurry to the suction of a Wilfley No. 4 centrifugal pump which is driven by a General Electric motor.

Two Morris centrifugal pumps and two Worthington pumps connected to a common suction line handle the slurry. The Morris pumps ordinarily are used to fill the tanks, while the Worthingtons are used as transfer pumps.

Silo Slurry Tanks

The construction of the slurry-storage tanks is interesting, in that the tops of the slurry tanks form the floor of the kiln house. There are 14 of these slurry tanks, each being 20 ft. 6 in. in diameter and 38 ft. high. Hugh concrete columns that appear as pilasters on the outside of the slurry tanks support the kiln. This massive piece of concrete construction really must be seen to be appreciated. One of the interesting features is that, despite the heavy concrete work, it is so fabricated that an airy and well-lighted condition exists among the slurry tanks and underneath the kiln. The tanks are built in three groups of four and one group of two tanks. Each group is independent of the remaining groups, with expansion joints between. This design and construction should take

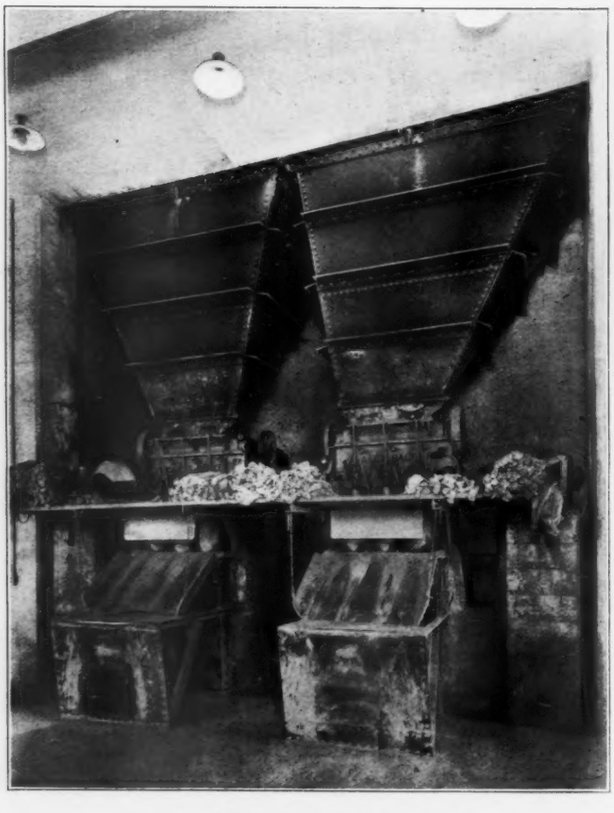
Kiln house at left. Other building houses switchboard, store room and machine shop



Clinker-storage portion of craneway, the gypsum-storage tanks forming wall

care of any settling that might occur, with the minimum of cracking. The slurry piping is so arranged that any pump or pumps may be used to do the transferring, to fill the tanks or to pump to the kilns.

Twelve tanks are used to agitate and correct the slurry, while the remaining two tanks feed the kiln. Only half the tanks are now used, the installation of the slurry tanks having been designed to take care of two kilns.



Stationary packers

A Bartholomew mechanical agitator and a Bartholomew air distributor agitate the slurry in each tank. This is almost the same system used by this company in its Fort Worth plant. The agitator

Platform beneath cement silo storage

consists of a shaft with arms extending therefrom, every alternate row of arms extending only halfway to the wall of the tanks. Plates on the arms are set at an upward pitch to keep the slurry in all the tanks moving upward and preventing it from settling out. Air is added at frequent intervals by the Bartholomew air distributor to produce further agitation. The gearing on the Bartholomew agitator is located on the floor of the kiln-house, which is formed by the tops of the slurry tanks. It is driven by a General Electric motor through a Foote speed reduction unit.

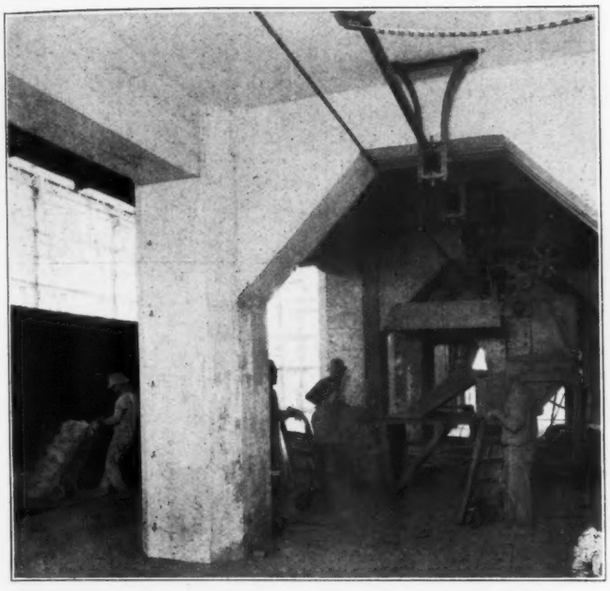
The kiln is fed by a Bartholomew ferris-wheel type of feeder, which consists of a disc with buck-

ets mounted upon it, and is controlled from the laboratory.

The Kiln House

Supporting the kiln are four groups of concrete columns, which were described above. The largest columns are under the center support of the kiln. These are 9 ft. square, while the remaining columns are only 5 ft. square.

The highest point of the kiln elevation is nearly



Loading railroad cars from a portable packer

50 ft. above the ground. The concrete structure enclosing the kilns has a structural-steel frame; the roof clearance is 32 ft. The kiln is under cover, and the kiln room is well-lighted and well-ventilated. The roof is of saw-tooth construction.

The kiln is a Traylor rotary, 300 ft. long and 11 ft. 3 in. in diameter its entire length, with four tire supports. The Trinity Portland Cement Company has been a leader in the use of large kilns. The kiln is gas-fired using a burner of the company's own design. A large American Blower Company fan, driven direct by a General Electric motor, supplies air to the burner. The air is preheated to about 365 deg. by being drawn over the hot clinker and is passed through a homemade dust separator before going to the fan.

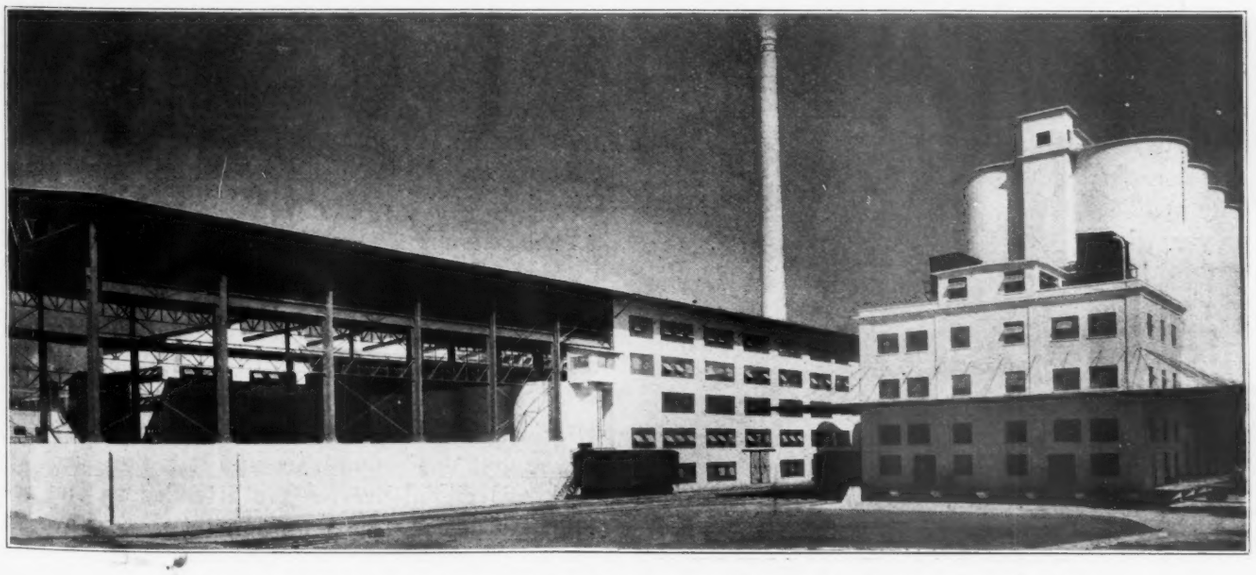
The 150-hp. Allis-Chalmers motor rotates the kiln through a Texrope reduction drive and gears. After passing through the kiln, the gases are run through three dust-collecting chambers before passing up the stack. The dust collectors employ baffle plates which cause the gases to reverse their motion three times before entering the stack. Space has been left for a draft fan if ever needed; however, this was only a construction foresight, the stack having been designed for a 1¼-in. draft, while now only a ½-in. draft is necessary.

From the kiln the clinker falls into a channel 7 ft. wide by 22 ft. high, which is located directly in front of the kiln. From this channel it is dumped into another channel, where it flows to the cooler. The channels are really a primary cooler with a baffling effect.

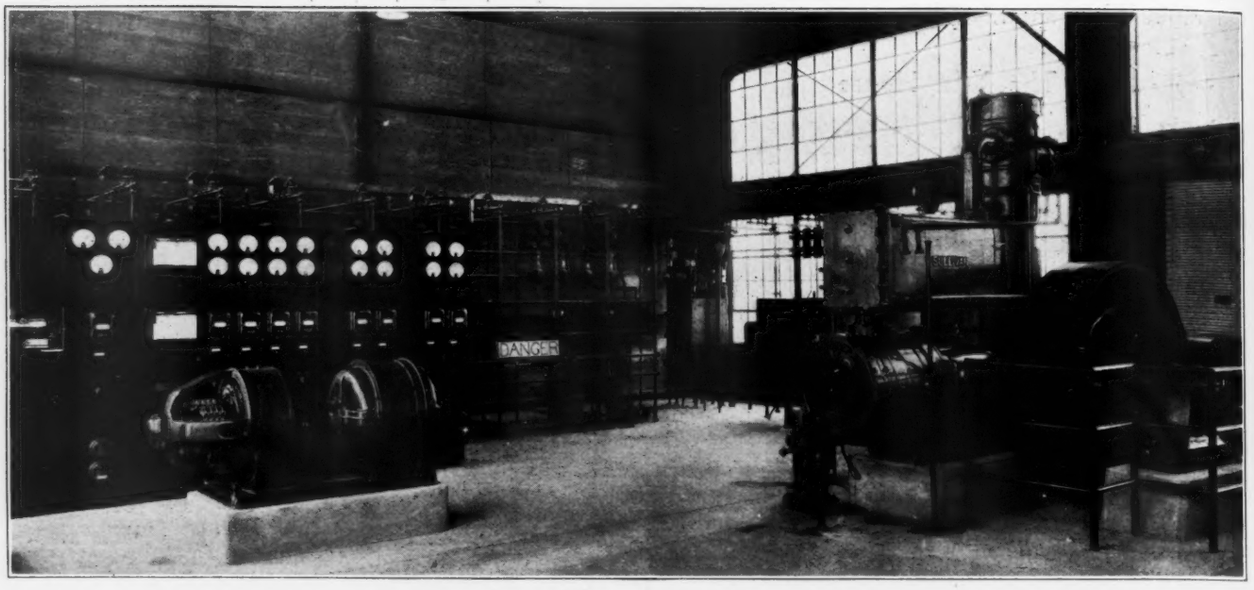
The Cooler

Set under and parallel to the kiln, is an 80-ft. by 8-ft. Traylor rotary cooler, powered by a 50-hp. General Electric motor through a Texrope drive. From the cooler the clinker drops into an F. L. Smidth Company skipulter conveyor which carries it through a tunnel and to a 16-in. Link-Belt bucket elevator that dumps it into the clinker storage. The elevator is between 30 and 40 ft. high on centers.

As stated before, the crane which handles the raw material handles also the clinker from the clinker storage and to the mill. The clinker storage bin is about 100 ft. wide and 125 ft long.



Clinker storage, tube-mill house, and packing house. Note dust collectors upon the latter



An air compressor and portion of switchboard

Gypsum also is handled by the crane from the gypsum silos between the clinker storage and the mill room.

Finish Grinding

The grinding mills have been described—two for raw grinding and one for finishing. The finish grinding prepares a product, 92 per cent of which will pass a 200-mesh screen.

From the finish mill the cement drops to a suction pit from which it is drawn out by two 6-in. Fuller-Kinyon pumps, each driven by a 40-hp. General Electric motor. The pumps operate alternately for 12-hour periods each. The cement is pumped to the storage and packing house silos 220 ft. distant, the rise from the pump being about 110 ft.

Silo Storage and Packing House

There are eight cement storage silos. Each is 32 ft. 8 in. in diam. and 80 ft. high. There are three interstitial bins. The silos are set on concrete columns to enable the use of portable packers, and cement is taken directly from any silo, as desired. In using the stationary packers, however, the cement is drained from the silos by a portable galvanized iron spout to a system of screw conveyors set in channels flush with the floor. This screw conveyor system consists of four screws running laterally, and each emptying into a longitudinal 16-in. screw conveyor that empties into a 20-in. bucket elevator, the latter lifting the cement to the bins at the stationary packers. There are four stationary packers and two portables. All are Bates 3-valve packers.

View in machine shop

A Sly dust-collecting system, consisting of two units, each composed of a Sly dust collector and an American Blower Company fan, is installed in the storage and packing house, and all screw conveyors and elevators, packers and the sack cleaner are connected to this system. A company-designed portable sack conveyor, mounted on rubber-tired wheels, handles the sacked cement from the stationary and portable packers to the loading platform, although hand trucks also are used for loading from the packers.

The columns supporting the silos create an arcaded effect between the loading platform and floor, giving the packing house shipping floor a roomy and neat appearance. Cantilever supports under the truck-loading platform enable the trucks to drive alongside flush with the platform.

The packing house proper is set against the silos. On the first floor is an office and it is here that all truck and city deliveries are attended to and recorded. The four Bates stationary packers are on the first floor of the packing house. The second floor contains the repair department and the tying

room housing four Bates tyers. The third floor houses a rotary-wheel sack cleaner. The sack storage is located on both the second and third floors. The screen screw that sifts the cement going to the stationary packers is also on the third floor. This is a circular screen 18 in. in diameter, which fits snugly around an 18-in. screw, both of which are 24 ft. long.

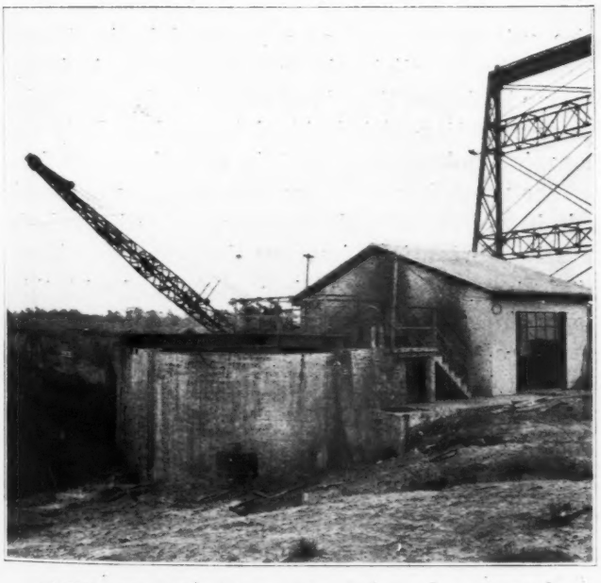
Power House, Machine Shop and Storage

The plant operates on purchased power. The switchboard and the Sullivan air compressors are housed together. All electrical equipment was supplied by the General Electric Company. An interesting feature in this plant is that almost all the motors are controlled by "across-the-line" starters. Push buttons are used to start and stop the motors.

In the same building which houses the switchboard and compressors are the storage room and the machine shop. The machine shop is modern in every respect, well-equipped and well-designed, and is capable of taking care of almost any repair work that becomes necessary.

The building housing the above equipment is a one-story, steel-frame, concrete building. It is neat in apperance, and harmonizes with the other plant buildings in architectural design.

Comfort of the employees has been taken care of by a large change-house and washroom. A spacious garage for employees' cars has been provided. The design of these buildings also harmonizes with the general scheme.



Building at right houses clay pumps and the drive of the clay mill in center

One of the finest office buildings seen at any plant is provided. The offices are well-arranged, spacious and furnished with modern fixtures and equipment. The offices and a conference room occupy the first and second stories of the building.

Chemical and physical laboratories are in the basement, although the word "basement" does not apply to it, for it is well-lighted, roomy and well-ventilated. The laboratories are thoroughly equipped for their important work which, with the Trinity Portland Cement Company, is a ceaseless effort to improve the already high quality of its product.

Personnel and Plant Design

The tract of land upon which the plant is located comprises only 17½ acres, yet there is ample room left for expansion. Space was provided for oil-storage tanks and a coal mill and coal storage, in case these were ever needed. The main plant structure housing shell storage, the clay storage, the grinding mills, the gypsum storage, and the clinker storage, is located approximately in the center of the plant site and is 665 ft. in length. The kiln building, 400 ft. long, is on one side of this long structure, while the packing house and silo storage, which are 225 ft. in length, are located on the other side.

Portion of the store-room

The plant's capacity is rated at 2,000 barrels per day, but it has produced better than this. Additional units and some new construction could increase the capacity to produce fourfold, according to the officials. In fact, the only construction necessary to quadruple the present capacity of the plant would be an addition built to the present kiln house. Such compactness, with the simple provision for expansion, indicates unusual as well as excellent design.

The general design of the plant, size of the buildings and choice of machinery were evolved by O. V. Bartholomew, general superintendent of the Trinity Portland Cement Company, and the plant is considered the latest development in cement plant design and construction. The chief

General superintendent O. V. Bartholomew at desk conversing with R. O. Bartholomew, engineer in charge of construction

engineer while the plant was being constructed was R. O. Bartholomew, who worked out the engineering and architectural design and details.

The present personnel of the plant includes R. G. Sutherland, who is superintendent and now in charge of the plant; A. E. Flowers, chief chemist; L. P. Chaney, plant electrician. The district sales office is located at the plant and is headed by H. B. Gillette, district sales manager. Other employees are C. G. Elliott, chief clerk. R. D. Benson, local purchasing agent, and A. A. Johnson, city salesman.

Alden Addresses Industrial Conference

There are two effective possibilities available to New England industry for carrying on a program against depressed price levels and unprofitable operation, according to Leon V. Alden, industrial engineer of the Thompson & Lichtner Company of Boston, in a recent address to the Industrial Group Meeting of the Fifth New England Conference being held under auspices of New England Council.

"The first of these, applying particularly to those industrial groups controlling the New England market," Mr. Alden said, "is 'industry-education' conducted by the industry in cooperation with the New England Council for the enlightenment of its members. Campaigns of industry-education have already done much to help the situation. The adoption of uniform methods of cost accounting, the publication of industry statistics on stocks, prices and volume, and the determination of definite standards and specifications for product all serve to replace doubt, uncertainty and confusion with definite understandable facts and conclusions.

"Industry-education of the immediate future, however, should hit more directly at the cause of depressed price levels—at the illusion that competitive price cutting, either direct or disguised, can ever be profitable. On the foundation laid down in uniform costs, industry statistics and standard product specifications, this can be done by analyzing, one aspect at a time, the various factors involved in price cutting reasoning, and by pointing out the utter futility of this reasoning as a means to greater profits. By hammering these indisputable facts home again and again to every member of every industry, the present influences on price level, human nature notwithstanding, can be reversed.

"In our opinion, the New England Council is particularly suited to assume a position of leadership and to offer a common meeting ground for those industrial groups of New England which show a real desire to cooperate in a constructive way toward the solution of this problem which is common to all. For the past four years the Council has been engaged in a program of education and coordination and the technique developed should be of unusual value when applied to the specific problem of this discussion. In addition, the Council has available the experience of men who have devoted months of study to this problem of depressed price levels and who stand ready to offer advice and counsel in formulating a practical program for constructive action.

"Many New England manufacturers face the price cutting problem on a national basis. These manufacturers obviously can accomplish little on a group basis and their hope of combating the problem is a matter of individual ingenuity. It is encouraging to know that certain manufacturers facing the most intense price cutting on a national scale have been able through properly directed efforts to substantially improve their profit position.

"Most manufacturers when confronted with this proposition will state that they already know their product costs. That this condition is not generally true was recently disclosd in a survey among the members of the National Association of Manufacturers. Of the hundreds of firms who contributed information to this survey, less than 50 per cent know their costs with sufficient accuracy to intelligently direct their sales policy.

"Confusion exists among many manufacturers with regard to the depressed price level problem. It has nothing to do with legitimate price reductions based upon large volume of business. It has nothing to do with over-production, over-capacity, or supply and demand. It is due almost entirely to the illusion that greater profits can accrue from an increase in volume based on price cutting. When this illusion is destroyed, the root of the depressed price level problem is also destroyed."

Cement Technology in 1929

By C. H. SONNTAG

THERE has been no outstanding innovation in the method of making cement in the past year. With possibly two exceptions, extreme fine grinding and slurry filtration, progress has been made along paths already well surveyed, and even these two exceptions have foundations of experience gained in earlier years.

Stripping

For a few years it seemed that hydraulic stripping would become a recognized means of removing overburden from cement plant quarries, but it has not made the progress that its friends expected. Not all stripping operations can be handled hydraulically. There may be no water, the overburden may be too solid, or the rock surface may be too level. Whatever the reason, power shovels, dump cars and light locomotives are still doing most of the stripping for cement plants. Gasoline locomotives and gasoline or electric shovels are rapidly replacing steam machines.

Quarrying

The strenuous service that is demanded from power shovels in quarries in hard and massive limestone has led to a general redesign and strengthening up of these machines, so that one purchased now is a far better unit than the one of three or four years ago. Cars of the tray or Phoenix type, with arrangements for dumping by power, are recognized as requiring the minimum of maintenance for this severely punished equipment.

The firing of a number of blast holes drilled by well drills demands the use of considerable powder in one shot. It is becoming recognized that there is enough money involved in one of these shots to warrant careful attention. The explosives manufacturers have in their service men who have acquired familiarity with the use of their product under all sorts of conditions. These men are qualified to give expert advice in drilling and blasting, and cement companies are now quite commonly availing themselves of the advice to be had from them. Their wide viewpoint may enable them to suggest economies that might not occur to a local man.

Raw Grinding

The compartment mill is becoming almost standard equipment in new mills. The year has seen a further trend toward finer grinding of raw material in order to promote clinkering and permit the manufacture of high-limed cement that will be entirely sound. If this trend continues it will be necessary to consider some form of classifier or separator, as it has been shown in ore-dressing that grinding mills are more efficient in closed than in open circuit. Present-day air separators will work on dry raw material, but the writer knows of no separator that can be used on the thick slurries at present used in wet process mills.

Slurry Filtration

Less than a dozen wet process mills have so far availed themselves of this newest means of increasing kiln production and saving fuel, but those which have filters in operation are enthusiastic over the results. Additions of about 300 barrels per day to the output of a kiln and a fuel saving of 20 to 30 pounds of coal per barrel are reported. This brings wet process kiln performance quite close to that of dry process kilns, and largely offsets one of the claimed advantages of that process.

Filters cannot be installed cheaply. Sometimes extensive remodeling must be carried out, and much individual engineering will be needed, but the returns amply justify the expenditure.

Burning

The year has again seen the longest rotary kiln put into service. It is 374 ft. long, 11 ft. 3 in. and 10 ft. in diameter, and is in the Hull plant of the Canada Cement Co.

There are several 343 ft. kilns in operation in various plants, and one of this length was installed this year, but with these exceptions recent kilns have ranged from 200 to 250 ft. long and from 10 to 11 ft. in diameter.

Burning is much more thorough in order to make a product that will meet the present demand for high early strength and at the same time be sound as it comes from the kilns.

Waste Heat Boilers

The public service power companies have at last realized that the waste heat boiler in a cement plant is a formidable competitor of purchased power. Many of these boilers have been in use long enough for the cost of power obtained from them to be definitely known. In consequence, power companies are now showing a desire to sell power to cement plants at a figure competitive with the cost of waste heat power. When this is done, the cement maker does not care to burden himself with the investment in a waste heat power plant and its upkeep. Hence most of the new mills buy their power, but they can install waste heat plants whenever it appears to be economically wise. Of course when there is no available source of purchased power, a waste heat plant should be put in.

Powdered Coal Preparation

The standard equipment still is a rotary dryer followed by pulverizers of the high-speed type. Most of these use air separation. So far as the writer knows, no cement kiln has been equipped recently with any of the unit coal pulverizers that are coming into use in boiler plants and other industries. It seems likely that in the near future much of the drying will be done in the mill by hot air circulation.

Clinker Cooling and Storage

The old practice of out-door storage of clinker has had to be abandoned because clinker so exposed for any length of time is deficient in early strength. Cooling is now almost always done in rotary or Unax coolers, and the clinker is cool enough and sound enough to grind at once if necessary. No better arrangement than combined storage of stone, gypsum and clinker under one roof has been found.

Clinker Grinding

Here also the compartment mill is becoming standard. Modern designs do not require air separators to prevent the appearance of coarse particles in the finished product, but the insistent demand for finer grinding and high early strength will soon make some form of air separator necessary. The air analyzer and microscope are being used to study the fineness of cement, and one is beginning to hear of microns instead of meshes.

The very large compartment mill that was put in service about two years ago has not been duplicated, and those installed during the past year do not differ materially from those built previously.

Packing and Shipping

The advent of a reliable paper bag has increased the popularity of this form of package by leaps and bounds. One company is sending out 50 per cent of its production in paper.

The rope paper manufacturers at one time furnished most of the open mouth single-wall paper bags that were used for cement. They have recently brought out a two-wall bag made of rope paper that is giving an excellent account of itself in trial shipments, and may become an active competitor of the multi-wall bag now used so extensively.

Dust Collection

Every department of a cement mill may now be kept free of dust at a reasonable cost with two exceptions:—the kiln stacks and the coal dryer. The Cottrell system will take care of the kiln stacks, and one or two installations have been made this year. The collection of coal dryer dust in cold weather is hardly on a thoroughly satisfactory basis, but the problem is understood and is on the way to solution.

Anhydrite vs. Gypsum

Many of the gypsum producers find considerable anhydrite in their deposits. It has no extensive commercial use, and has been actively offered to cement makers as a substitute for gypsum. Two investigations at the Bureau of Mines have shown that anhydrite is not as universal in its retarding effect as gypsum, and in the present state of our knowledge it is not safe for general use as a retarder.

New Mills

No attempt will be made to discuss the new plants that were put into production in 1929, as they have all been fully described in the technical press. It is worthy of note, however, that only one of them uses the dry process. It was built by a company having no wet mills, but with many years of experience with the dry process.

Cement making has passed the "rule-of-thumb" stage. For its future development it must call to its aid the highest type of physical chemistry and the various branches of engineering. Accurate records of the cost and ultimate value of changes and experiments will be kept, and only those will be retained that show a definite lowering of manufacturing cost or improvement in quality. Progress in this way may seem slow, but it will be done on a solid basis, and its value will be definitely demonstrable through the cost-keeping department.

Water Transportation

Bulk carriers of cement on the Great Lakes have been in service for several years, but the past year is notable for the bulk transport of cement on the Mississippi River for the first time. Cement is being barged from a mill at Cape Girardeau to newly constructed silos in Memphis, where it will be packed for the southern trade. This is doubtless only the forerunner of a much more extensive use of the inland rivers in this way, and is in line with the Government's persistent efforts to restore navigation on the interior waterways. It is reported that this same barge line will be extended to St. Louis, and that a similar transport system will be started from Davenport, Iowa. Silos have been built in Washington, D. C. to be supplied with bulk cement by boat from Norfolk, Va. It seems likely that before long we will see ocean-going self-unloading bulk cement carriers engaged in coastwise and export trade.

Extraction of Potash from Polyhalite and Greensands

Considerable progress in the investigation of proposed processes for the extraction of potash from such minerals as Texas polyhalite, wyomingite, and New Jersey greensands is being made at the Nonmetallic Minerals Experiment Station of the United States Bureau of Mines, Department of Commerce, New Brunswick, N. J. Arrangements have been made to make tests on the residues from New Jersey greensands for sand-lime bricks.

New York Crushed Stone Plant Secures Stone Without Quarrying or Mining

Raw Material Is Limestone Excavated From Erie Canal Twenty Years Ago

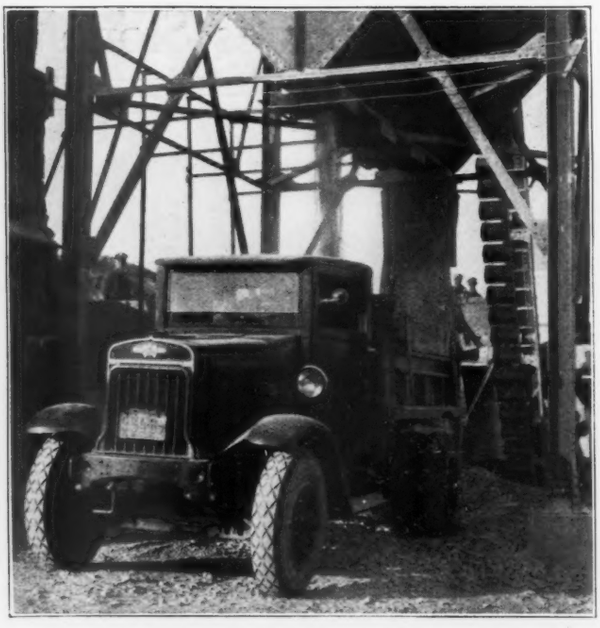
THE operation of the Lockport Stone Co., Inc., at Lockport, N. Y., is one of the few in existence which obtain their raw material without having to resort to quarrying or mining. The plant is located on the state road between Lockport and Buffalo just inside of the city limits and is on the bank of the Erie Canal from Lake Erie to the Hudson River. The rock used is hard limestone well suited for crushed stone which was excavated when the canal was deepened and widened into a barge canal some 20 years ago. It is piled along the bank 20 to 25 ft. deep for a distance of about ¾ mile on state property under lease to the company. The company was formed in the spring of 1928 and the main part of the plant erected soon afterward.

Gasoline shovel loading stone from original piles into truck

The stone is loaded from the piles by a Pawling and Harnischfeger Model 600 gasoline crawler shovel with a 1-cu. yd. dipper into an International 2¼-ton steel bodied dump truck which hauls it to the plant. What little stone is too large to be handled is broken up by pop shots. A portable Ingersoll-Rand air compressor and jackhammers of the same make are used for the secondary drilling. Hercules 40-per cent dynamite and electric caps are used and detonation is through dry-cell batteries.

The stone is hauled at present about 500 ft. and dumped into the Allis-Chalmers McCully No. 5 gyratory primary crusher. This discharges into a chain bucket elevator to the top of the plant where it feeds a Telsmith 48-in. by 16-ft. revolving screen. This has ½-in., 1½-in. and 2¾-in. perforations, and a 5-ft. dust jacket with ¼-in. perforations, over the ½-in. section. The four sizes produced, No.'s 1, 2, 3, and dust go directly into the four-compartment Butler steel bin which has a total capacity of 110 tons. The oversize from the screen drops to a 12-in. belt conveyor on 24-ft. centers for recrush-

View of plant from northwest showing trucks discharging into primary and secondary crushers



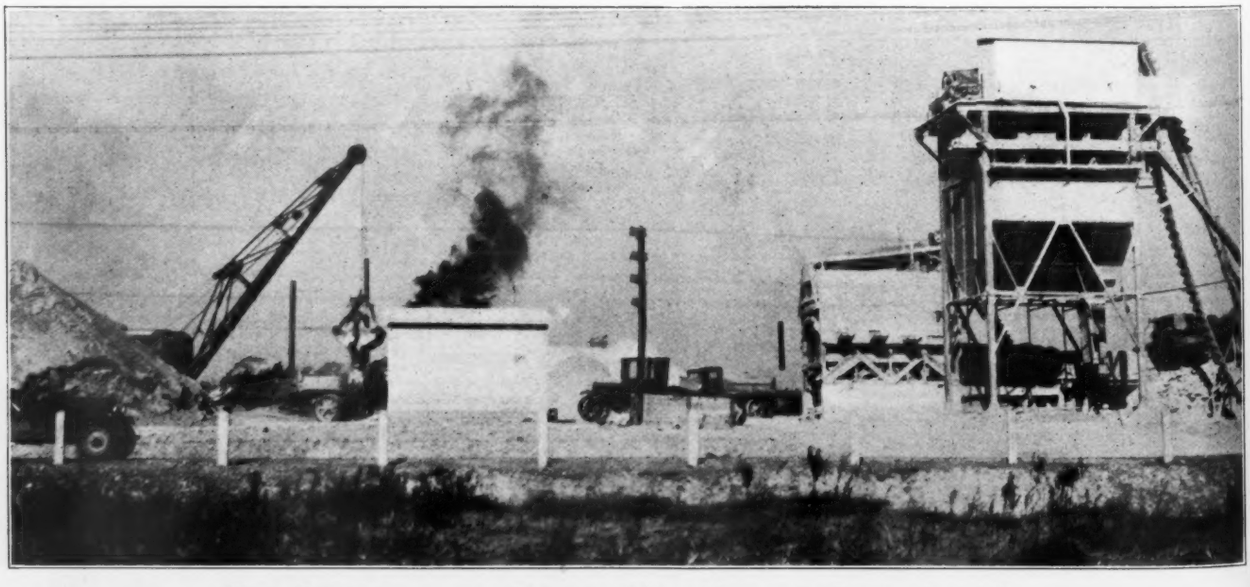
Truck loading under bins

Plant from west showing main sizing screen above

ing. Each of the bins has a Butler gate for loading directly into trucks under the bin. The primary crusher is belt driven by a 35-hp. Westinghouse motor which also drives the screen, elevator and conveyor through chain drives.

When any size of material is produced more rapidly than the demand it is loaded into trucks and hauled to a stockpile. Here it is rehandled by a Pawling and Harnischfeger Model 300 gasoline crawler crane with a ¾-cu. yd. Lakewood clamshell bucket which also loads into trucks from the stockpiles when occasion demands. There is generally an excess of No. 2 stone and this is loaded either from the bin or from the stockpile into a second International 2-ton truck which hauls to the recrushing plant. This section of the plant was moved to its present location from another quarry and is considerably older than the main plant.

The truck discharges the No. 2 stone directly into the Telsmith No. 2 F gyratory reduction crusher. This discharges to a belt bucket elevator which feeds the Telsmith 36-in. by 10-ft. revolving screen. This has ¼ and ½ in. perforations. The two sizes produced and the oversize go to three separate compartments in the wooden bin which has a total capacity of 25 tons. These bins discharge into trucks through side chutes. The crusher is belt



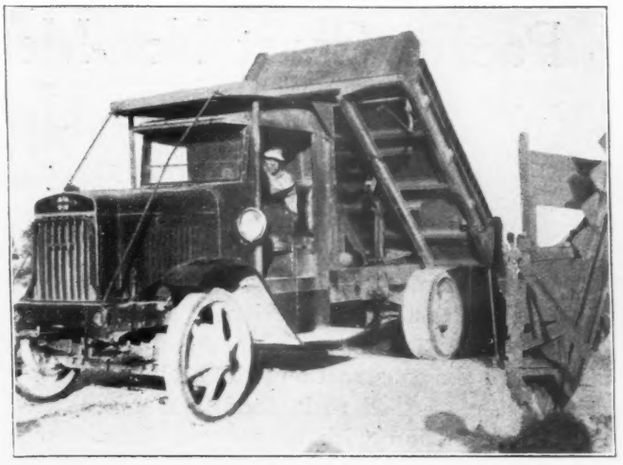
View of plant from across highway. Office and crane loading truck at left

Supt. Robert H. Bell alongside the gyratory primary crusher

driven by a 20-hp. Westinghouse motor which also drives the screen and elevator. There is also a Blaw-Knox 2-compartment steel bin of 60-ton capacity equipped with volume batchers of the same make which is used to batch sand and stone for concrete road work. The sand is obtained from a local pit.

A small office is maintained at the plant. This houses a Buffalo 18½-ton-capacity platform scale

Gasoline crane loading from stockpile to truck



Truck dumping stone into primary crusher

for weighing out material. Robert H. Bell is superintendent of the plant. Geo. Broderick, president, and Geo. C. Bewley, treasurer, of the company are also joint proprietors. The plant capacity is 300 tons in a 10-hour day but has been operated an average of 14 hours all summer because of the amount of road work going on in the vicinity. The No. 1 stone especially is in great demand as top dressing for roads.

Utilization of Gypsum Containing Large Percentage of Anhydrite

Naturally-occurring anhydrite, which corresponds chemically to gypsum without the latter's water of crystallization, has been known for a long time to have a very slow rate of solution in water; much slower than that of gypsum. Recent studies by the United States Bureau of Mines in co-operation with Rutgers University at New Brunswick, N. J., indicate that if naturally-occurring anhydrite is ground fine enough, its rate of solution is of the same order of magnitude as that of gypsum ground to the same degree of fineness.

A sample of anhydrite powder was subjected to air classification, and thereby separated into fractions of the following sizes distributions: 0 — 3 microns (one micron equals one-twenty-five thousandth of one inch), 6 — 12 microns, 12 — 24 microns, etc. It was found that the finest fraction, that is, the 0 — 3 micron particles dissolved at such a rate that the saturation solubility of gypsum was reached in 3½ minutes. These results are of importance in any discussion of the utilization of gypsum containing large percentages of anhydrite for the retardation of the set of portland cement. If the rate of solution of the retarder is one of the controlling factors involved in the set of cement, then it would seem permissible to utilize gypsum containing a large percentage of anhydrite provided this retarder is ground to a sufficient degree of fineness.

Pacific Coast Non-Metallic Minerals Industry Experiences Unsettled Condition

Activities for 1929 Reviewed and a Forecast for 1930

By GORDON F. SONDRAKER

THE non-metallic minerals industries on the Pacific Coast have experienced a very unsettled year. On the major non-metallics products used in the construction field, such as cement, lime, plaster, crushed rock, sand, and gravel, excessive competition with consequent demoralized prices has made the year unsatisfactory from the producers' point of view. Volume of business reported by the various producers for the construction field has remained about the same as during the year 1928 with individual operators reporting either slight gains or slight decreases. The benefits that commonly would be derived from such a continued volume of business, however, have been more than offset by unstabilized prices.

The latter part of 1929 has found a gradual improvement for the better in these lines. Consolidations of several of the major producers have served, in a measure, to stabilize prices on a fair basis. Periodical price wars that have harmed the consumer as well as the producer are being eliminated through a better understanding among the operators. These facts, coupled with the practice of rigid economy in operation, will ultimately place the building-materials producers in a more sound condition than has prevailed during the past year, so that the ensuing year has much brighter prospects from the producer's standpoint.

We quote from a statement made for PIT AND QUARRY by one of the leading cement producers of the Pacific Coast:

"The volume of business experienced by the cement manufacturers on the Pacific Coast for the past year has, as a whole, averaged about ten per cent less than that of 1928. Unsettled prices have worked the greatest hardship on the cement industry in this area during the year just closing.

"It is impossible to predict at this time just what the new year will bring forth and it will probably be well along in the spring before any reasonably accurate prediction covering cement activities for 1930 can be made. We look forward, however, to some rectification of those evils that have kept the cement business from being entirely satisfactory during 1929."

A statement prepared by one of the leading distributors of building materials on the Pacific Coast is quoted herewith:

"The year 1929, as a whole, has not been entirely satisfactory. Unsettled price conditions on cement, lime and other non-metallic products used in the construction field have more than offset the benefits derived from a slightly enlarged volume of business experienced during this year.

"The year beginning January 1, 1930, offers some promise of increasing the volume of business over that experienced in 1929 and we are looking forward to price conditions becoming stabilized on a fair basis. Just what effect the Hoover prosperity program will have on additional construction on the Pacific Coast remains to be seen; however, it cannot help but better present conditions to some extent."

The non-metallic products in use by the glass, ceramic, chemical and similar industries have enjoyed a good year. In this classification are included feldspar, quartz, silica, silica-sand and clays.

Those products in common use by the oil industry such as various filter clays, drilling muds, and barytes have naturally decreased due to the oil conservation program recently inaugurated by the State of California.

Those non-metallic minerals that have been introduced on the market within comparatively recent years have been going through a transitory stage during 1929. Substitutions of cheaper minerals for those already in use have served to keep the industry agitated during the past year and whether this condition carries over into 1930 depends largely on the marketers of these products. As a whole those producers and operators in non-metallics who were in a healthy condition at the beginning of 1929 have found their condition much improved. The ensuing year gives promise of a larger consumption of these lesser used minerals and prices will probably remain as stable as during 1929. The development of new markets and new uses during 1930, if pursued as vigorously as in 1928, will guarantee the continuance of the present healthy condition of this branch of the industry.

One of the leading marketers of these non-metallic products has offered the following statement:

"Business in the general non-metallic minerals field for 1929 has been very pleasing. The outlook for 1930 is not bright, due to substitutes being discovered for present non-metallics in their respective fields. This has caused the marketer to carry small stocks on hand and has hampered the efficient and economical operation of non-metallic mines and deposits."

(*Continued on page* 44)

Several New Markets for Blast Furnace Slag Developed by N. S. A. During 1929

By C. L. McKENZIE
President, National Slag Association

CONSIDERING the slag industry nationally, the year 1929 has been relatively not quite as good as had been anticipated. While the nation's industries in their total business have been unusually prosperous, construction work in some lines and in some localities has lagged, with a corresponding lack of demand for certain structural materials, including mineral aggregates. Total shipments have not shown an increase over 1928, and without having final statistics, it is believed the total production of slag in 1929 will be a little less than in 1928.

Based on the economic advantage of useful application of this by-product of the blast furnaces, and having in mind the demonstration of its worth by laboratory tests and, more important still, by many years' experience in actual use, which proved its volue, convenience and highly acceptable qualities when used as a construction material, it seems that the consumption of blast furnace slag should increase each year. It must be remembered in this connection that application of slag to useful purposes is reflected in the reduction of the cost of blast furnace products. This reduction is ultimately passed on to the consuming public by lower prices on all commodities made of iron and steel.

While commercial shipments may not have improved this one year, the National Slag Association and its members believe that 1929 has, nevertheless, been a year of substantial accomplishments. Important among these have been added the investigations, tests and reports to demonstrate and spread the knowledge of the qualities, adaptability and economical use of this material. The publication by the association of the symposiums, which now number 19, each one assembling all the known facts as to some quality, characteristic or use of blast furnace slag, for the first time provided in conveniently accessible form the necessary information for those who have the responsibility for determining what materials are to be used. This series of symposiums, which was begun in 1928, has been continued during 1929. Abstracts of each symposium have been published in PIT AND QUARRY from time to time, the first seven having been covered during 1928. A list of the symposiums abstracted and the issues in which they were published during 1929 follows:

8. Use of Slag in Bituminous Construction—February 13, p. 80.
9. Use of Slag Ballast for Railways—March 13, p. 84.
10. Is There Any Corrosive Quality in Slag?—January 16, p. 96.
11. Chemical and Petrographic Composition of Slag—March 27, p. 72.
12. General Building Construction With Slag Concrete—December 4, p. 68.
13. Slag Bridges and Other Water-Resisting Structures—June 5, p. 54.
14. Physical Qualities of Slag—June 19, p. 85.
15. Rolled Slag and Traffic-Bound Roads—July 17, p. 65.
16. Workability and Yield of Slag Concrete—April 24, p. 81.
17. Resistance of Slag and Slag Concrete to Certain Destructive Agencies—July 31, p. 56.
18. Compressive Strength of Slag Concrete—November 20, p. 95.

Test Roads Under Traffic

The Arlington Highway, designed and supervised by the U. S. Bureau of Public Roads, and the highway designed and constructed by the West Virginia highway department are two test roads for determining, under actual service conditions, the comparative values of concrete of different mixes, and workability with different aggregates, including slag.

Tests now being carried out by an A. S. T. M. Committee will indicate the value of the abrasion test for coarse aggregates in concrete. Another important piece of research and investigation is that covering the suitability of blast furnace slag as the material of which to construct filtration beds in sewage purification plants. The report has not been published but will be in the near future. The large number of sewage disposal plants that must be built affords a tremendous market.

Another potential market being developed is the construction of flying fields, requiring runways, paving and hangar floors. Whether the chosen type of surfacing is concrete, bituminous paving, water-bound macadam, or any modification of these, blast furnace slag is adapted to it and is an economical material to use in districts where slag is produced, processed and sold. Moreover, where available in the right form, as for example, water-granulated slag, our material provides the best possible fill for hollows and for leveling off and surfacing the grounds preparatory to paving. The slag, as a layer under the surface, insures rapid drainage after storms. Due to the porous character of the layer, it acts as a reservoir, retaining the moisture for maintaining sod growth during

periods of dry weather. The lime content of slag also acts as a sweetener to promote grass growth, as well as to loosen up "sour" heavy clay soils. Where available, water-granulated slag is particularly adapted to these purposes.

The majority of slag processing plants have been greatly improved to assure more thorough screening and more accurate sizing of the finished product. This has been accomplished partly by increasing the amount of screening surface used, and particularly by substituting or adding recently developed types of mechanical screens The adoption of mixing belts as part of the plant improvements has also given more accurate control in the grading of the aggregate.

New Plants

The Birmingham Slag Company completed and began operating its very large capacity new plant at Ensley, Ala. The plant is modern and novel in design. The France Slag Company's new plants, one at Chicago, and one replacing an obsolete one at Toledo, were completed in 1928, but had their first continuous operation in 1929. The Buffalo Slag Company is beginning the construction of a large new plant to replace its present No. 2 plant at Buffalo. A new well-equipped plant, though of relatively small capacity, was put into operation in 1929 at Topton, by Duquesne Slag Products Company. This company is also building a large new plant at Pittsburgh to be put into service in 1930. Improvements were added to its other plants. The Illinois Slag and Ballast Company substantially improved its South Deering plant near Chicago. The Midland Slag Company's plant at Midland was built in 1928 but had its first real operation in 1929.

In collateral lines, the most important development to date, especially as measured by value of product, is the cement plant of the Federal Portland Cement Company under the control of the Standard Slag and Buffalo Slag Companies at Buffalo. This plant uses blast furnace slag as one of the raw materials in making portland cement. Constructed in 1927, the plant had its first real operation in 1928 and has been on full production during 1929.

Altogether the slag producers have kept pace with the march of progress. They are in a better position today to meet the requirements of quality, production and service than they have ever been before.

Thirteen Southern States to Invest $222,250,000 for Roads

Southern producers of stone, sand and gravel, as well as cement and asphalt manufacturers are looking to the impressive road program planned in the thirteen states of the south for 1930 as a means of marketing a good deal of their production next year. For the south intends to spend nearly a quarter of a billion dollars in putting its highways in shape during the coming construction season. The proposed expenditures are as follows:

State	Construction	Maintenance
Alabama	$ 3,000,000	$ 1,700,000
Arkansas	18,000,000	3,000,000
Florida	9,000,000	1,800,000
Georgia	13,000,000	3,000,000
Kentucky	8,000,000	3,000,000
Louisiana	16,000,000	4,000,000
Mississippi	6,500,000	3,250,000
North Carolina	5,500,000	5,000,000
Oklahoma	20,000,000	4,000,000
South Carolina	21,000,000	2,500,000
Tennessee	12,000,000	3,000,000
Texas	30,000,000	11,000,000
Virginia	10,000,000	5,000,000
Total	$172,000,000	$50,250,000

The additional gas tax recently passed by the Georgia legislature is expected to provide $15,000,000 per year in future years, so that the highways in that state are due for considerable improvement in forthcoming years. South Carolina has an ambitious program which is largely dependent upon the outcome of its $65,000,000 bond issue. Louisiana has passed a road bond issue for $30,000,000 and the state highway commission expects to spend two-thirds of the amount next year. Texas has an ambitious program, with the contemplated expenditure of $30,000,000 for new construction and $11,000,000 for maintenance.

All in all, it is probably the most impressive highway improvement program ever attempted in southern states.

Unsettled Conditions Experienced

(*Continued from page* 42)

Another operator who mines, manufactures and markets practically all of the commercial non-metallic minerals states:

"Basic non-metallic products have remained stable throughout the year with some slight increase in consumption. Orders booked by this company for November and to date in December have far exceeded those booked during a similar period in 1928. The outlook for 1930 is very satisfactory; from all indications such minerals as feldspar, silica and ground mica will be more in demand than in 1929. The various clays and other lesser-used non-metallic minerals are in a rather transitory period and it is impossible to predict with any degree of accuracy as to which of these will increase or decrease. It might be said, however, that as a whole the year 1930 gives promise of a larger consumption on the Pacific Coast of all non-metallic outputs and a consequent greater development of non-metallic deposits and their potential markets."

Alabama Plant Is an Outstanding Producing Unit in Lime Industry in 1929

THE lime industry has passed through a generally satisfying year and, while some sections of the country are able to produce far in excess of normal demand, production in other areas, particularly in the East, has been close to capacity. This condition has been regulated, to a large extent, by the operators themselves and as a consequence there was little activity in new plant construction, although many existing plants made advances in refined production by installing new, modern equipment.

One of the outstanding plants, which is just completing its first calendar year of operation, is the one at Calera, Ala., owned by the Alabama Lime and Stone Company. The plant is located in the well-known Shelby County lime district and has a capacity of 900 bbl. of lime in 24 hours. The company also operates a crushed-stone plant at Calera, it having been producing before the lime unit commenced operations.

The lime plant is of modern construction, the foundation being of concrete and the superstructure of corrugated iron on a structural steel frame. The high-calcium stone for the lime plant is loaded by hand in the quarry into 6-cu. yd. Western side-dump cars, which are hauled up an incline by an Ingersoll-Rand air hoist. At the top, they are dumped into standard railroad gondolas and hauled to the lime plant, where they are unloaded and the stone goes into the stockpiles. From the piles, the stone is loaded into the lime kilns by a cable car running up an incline to the tops of the kilns. There are two Schaffer automatic kilns, each 90 ft. high and 17 ft., 4 in. in diameter. Coal is used as fuel, being fed to the kilns by Schaffer automatic stokers.

The kilns discharge onto a concrete floor and the spalls are sorted out. The well-burned stone is shoveled into a Jeffrey single-roll crusher under the floor, a 25-hp. motor supplying the power. A Jeffrey enclosed chain-elevator lifts the crushed lime as it is discharged 90 ft. to a 1,500-ton capacity steel bin. Before dropping into the bin, however, the crushed material passes over a screen which allows only the coarse material to enter the bin. The lump lime is loaded into barrels and bags from five spouts under the bin, weighing being done on a portable platform scale. Three other bin-spouts permit loading directly into cars in bulk if desired.

The fine material which passes the screen over the lump-lime bin is chuted into a steel storage-tank over a Schaffer hydrator. A 25-hp. Allis-Chalmers motor drives the hydrator through a Link-Belt silent chain drive. A Raymond air-separator and a Raymond pulverizer are driven by 25- and 10-hp. Lincoln motors, respectively. The fin-

Shovel loading cars in quarry, plant in background. Railroad car at top of incline carries stone to Lime Plant

Dumping carload of stone into primary crusher

ished lime goes to a Bates 2-bag packer driven by a 7½-hp. Lincoln motor.

W. J. Findley is superintendent of the lime plant. The main offices of the company are in the Martin Building, Birmingham, Ala. E. T. Schuler is president; R. V. McDonough, vice-president and general manager, and Frank W. Miller is second vice-president.

American Engineers Supervising Russian Development

More complete information has now been received in regard to the details of the large contract which the Macdonald Engineering Co., Chicago, recently closed with the Soviet Government of the U. S. S. R. This well-known company of construction engineers, which specializes in cement plants, has been appointed by the Russian Government as consulting, designing, and supervising engineers in connection with the great program of cement-mill construction included in the "five-year plan" of the U. S. S. R. This immense project requires large amounts of cement for the construction of the factories, steel mills, tractor works and other industrial and commercial buildings.

Russia has definitely and explicitly stated that it considers the industrialization of the United States more suited to its needs than one developed on European lines. This decision is dictated in part by the similarity in size of the two countries; in part to the similarity in population figures; and in part to the fact that Russia faces the problem of the necessity of transforming a predominantly agricultural country into one whose industrialization would provide goods for its consumption.

Starting with an annual cement production of only 14,000,000 bbl. for 150,000,000 people, the "five-year program" will bring this up to triple that figure. The Macdonald Engineering Co. will give instruction in the design of means to provide this increase along American lines, taking charge of the engineering work for Stromstroi, the Soviet cement department or "trust." It is also to instruct the construction department under American construction methods and with American construction machinery.

Cement mills will be located in strategic points in the Soviet republics in Europe and Asia. Specifically, the first four mills will be as follows:

(1)—A 1,800,000-bbl. wet-process plant for making high-early-strength cement; burning coal and using limestone; including a new power plant; to be built at New Spartak, Riazan Province, 108 mi. from Moscow on the Riazan-Ural Railroad.

(2)—A 1,800,000-bbl. wet-process plant for making high-early-strength cement; burning coal or oil and using limestone; and including a separate power plant; to be built at Kashira, Moscow Province, 60 mi. from Moscoe on the Riazan-Ural Railroad.

(3)—A 700,000-bbl. wet-process plant for making high-early-strength cement; burning coal and using limestone; and including a new power plant; to be erected at Black River, 30 mi. south of Novosibirsk, Siberia, on the Altai Railroad.

(4)—A 1,000,000-bbl. dry-process plant using blast-furnace slag; burning coal and coke; a separate power plant; to be built at Kertch, Crimea, on the Black Sea, and to ship both by water and by rail.

The contract of the Macdonald Engineering Co. covers a period of years, during which it will increase Russian cement production by a large amount. A portion of the cement-mill equipment will be purchased in America, on recommendations of the Macdonald Engineering Co., by the Amtorg Trading Corporation, New York.

The Macdonald company has closed a similar contract with the U. S. S. R. for the design and construction of grain elevators and flour mills, another specialty of that company. This work will also be scattered throughout European and Asiatic Russia, being handled under Soyuskleb, (the Co-operative bread trust), Exportkleb (the "grain-exporting trust") and other government grain monopolies.

The contracts were negotiated by J. C. Carter, vice-president of the Macdonald Engineering Co., after he had made an extended tour to determine the requirements of the country. R. P. Durham, president of the company, who had an intimate knowledge of Russian conditions from pre-war experience, supported Mr. Carter in the negotiations.

Every Operating Employee Present at Manitowoc Portland Cement Company's Safety Dinner

THE semi-annual safety dinners of the Manitowoc Portland Cement Company were held December 18 and 19 at Manitowoc, Wis. Identical programs were given on both evenings, in order to afford opportunity for all of the 250 employees to attend.

H. Vanderwerp, vice-president of the company, served as toastmaster and general chairman. Addresses were made by P. H. Dawson, secretary of the Medusa Portland Cement Company, with which the Manitowoc Company is affiliated; A. B. Pfeifer, auditor of the Medusa Company; W. M. Powell, the Medusa safety director; F. E. Town, plant superintendent at Manitowoc; R. E. Minogue, assistant superintendent and chairman of the safety committee; and A. J. R. Curtis of the Portland Cement Association.

All of these talks were focused on the subject of improving the Manitowoc safety record during 1930. Mr. Dawson brought the personal greetings of J. B. John, president of the Medusa and affiliated companies. W. M. Powell discussed the safety record of the Manitowoc plant with others in the Medusa group. Mr. Curtis' remarks are reported herewith.

The meetings were called at 6:30 p.m. each evening, and on taking the attendance record it was found that every operating employee of the mill was present. In connection with the dinner there was spirited community singing and a program of entertainment which preceded the speakers.

"What's the Idea?" was the topic of a stirring address by A. J. R. Curtis, assistant to the general manager of Portland Cement Association. Mr. Curtis' talk proved so interesting and full of ideas on safety that it is printed here.

"There is no substitute for a careful man. Loren Barton, vice-president of the Riverside Cement Company, recently said that almost all accidents are due to carelessness. Carelessness is the usual product of thoughtlessness. When it comes to thought, someone has said that the great American desert is located under the hat of the average man. Careful men operate hazardous plants safely. Reckless men produce numberless accidents in almost any plant. It is the human element that counts more than the machinery or the buildings or the climate or anything else.

"I feel very much at home here tonight, a great deal like a soldier in Africa of whom you may have heard. He became separated from his crowd and decided that he was being pursued by cannibals. After traveling a long distance he discovered a light and made off in that direction. He could see figures around a fire, which he feared were cannibals. Drawing closer he heard, 'You blankety blank fool, don't you know three of a kind beat two pair?' 'Thank God,' said he, 'I am among Christians and friends.'

"Two men met in a hotel lobby. 'Say, old man, what's your name?' said the first, extending a friendly hand. 'My name is Jones,' said the other. 'That's funny, so is mine' replied the first. 'What is your occupation?' 'I'm a naturalist.' 'What is a naturalist?' 'One who studies the flowers, birds and animals. In fact, we believe we can actually talk the language of the animals.' 'Mr. Jones, you don't mean to say you can talk to the animals?' 'Yes, sure.' 'Well, Mr. Jones, will you do me a favor? The next time you run across a polecat, ask him for me, if you will, "Big boy, what's the idea?'

"Now that is just what I want to ask the Manitowoc organization here tonight. What's the idea of these accidents you have occasionally? You have a splendid new mill, well-built and equipped with modern machinery, safety appliances and good lighting. That should be an advantage. Yet, the two oldest mills west of the Mississippi were the first two in that area to win the Association safety trophy. Another example of an accident-free old plant is the Lehigh mill at Ormrod where Mr. John was employed 30 years ago. Last year that mill operated without accident and won a trophy. It has had only two minor accidents in three years—a magnificent record.

"All of you speak and read English. We are constantly reminded that the presence of foreign-speaking employees is a hazard. Yet, the very first mill to win the trophy is one which employs Spanish-speaking workmen for all ordinary labor. I recently visited a mill which has had no accidents for more than a year, where an interpreter stood beside me in order to repeat my remarks in foreign tongues to half the audience.

"Two executives of two groups of southern mills, both confided three years ago that they were playing to hard luck in the trophy contest because they employed practically all colored labor. In 1928 one of these mills had a perfect record and you probably saw in a recent number of Accident Prevention Magazine, a picture of the resulting watermelon party. This year two of these mills of the same company are free of accidents and all three mills of the other company are clear.

"Is an old mill safer than a modern plant? Does it make men less careful to provide modern facilities? Is the Mexican or negro, with his lower

standard of living, his inferior education and supposedly lower order of intelligence, a safer workman than the white man and does he have a higher regard for the safety of fellow workers? We would hate to admit it, but what other conclusion can you form from this evidence?

"We are told that when Theodore Roosevelt was a youngster he was beaten in a fight by a boy his own age. Discouraged, he went to his father. 'You have a weak body' said his father, 'but you can overcome that. All you need is the will to do what you must do, and perseverance.' So strong did he finally become that when he was shot at Milwaukee, he continued with his plans and made a speech with a bullet in his body.

"What you need is the will to succeed and perseverance. All hazards inherent to your surroundings can be overcome, with a few unimportant exceptions. No obstacle confronts you which cannot be surmounted. A farmer in southern Wisconsin lost his voice and couldn't call his hogs. So he took a piece of wood and would knock on a fence post and the hogs would come up for their feed—a simple way to overcome his difficulty. This method worked all right until the woodpeckers got into the field and pecked on the posts, nearly running the hogs to death trying to answer the calls!

"Organize your men so they will answer without having to knock on the fence. Your safety rules are clear and easily understandable. Each man in the organization should go about it deliberately to learn the rules, put them into practice and see that others do the same. Keep the telephone of your mind so constantly employed with ideas for improving your work, preventing waste and adding to the safety of yourself and your companions, that when old man carelessness calls up, he will find your line busy. After a while he will forget your number.

"Isaiah Hale tells of a colored ferryman who refused to take across the river a man who didn't have a dollar, ready money, to pay his fare. When the man remonstrated the colored fellow said, 'Boss, let me tell you somethin'. If you all ain't got the price of the fare it really don't make a lot of difference which side of the river you is on!'

"Gentlemen, you've got the price to cross the river and we want you over on the safe side 'where Association trophies grow on trees and the opportunities are rollin' on the ground."

Gypsum Industry Oldest in Canada

Canada is the largest exporter of crude gypsum in the world, shipping 824,536 short tons valued at $1,240,987 in 1928, according to the United States bureau of mines, which has completed a statistical summary of the Canadian gypsum industry. The production of gypsum is one of the oldest industries in Canada and, in point of gypsum output, Canada ranks third among the countries of the world.

Gypsum was discovered in the maritime provinces at a very early date, but there is no authentic record of the production until about 1822, when gypsum was mined on a small scale in Ontario. Since then the production has grown slowly but steadily to more than a million tons. In 1928 the output was 1,205,846 tons, valued at $3,622,007.

Nova Scotia, New Brunswick and Ontario, for the early years, were the producing provinces. Manitoba entered the field in 1901, and ten years later active operations were started in British Columbia.

From the beginning of the industry in 1822 Canadian output of gypsum has grown steadily but slowly. Even in 1928, however, more than two-thirds of the tonnage was exported to the United States, much of it simply as crude rock.

Establish Your Own Cement Research Department

BY W. F. SCHAPHORST

All industrial leaders of today admit that research is producing remarkable results. The United States is forging rapidly ahead, owing to the extensive research departments operated by practically all of our foremost manufacturers.

But why confine research solely to large concerns? Officials of the smaller companies seem to believe that research departments are only for the large establishments and that a small organization cannot afford such a department.

No doubt it is true that the small or comparatively small concern cannot afford an extensive research department for doing a great deal of experimenting. But why attempt to begin with a large one? A small one-man research department may be more efficient than a large one, anyway. It all depends upon that one man.

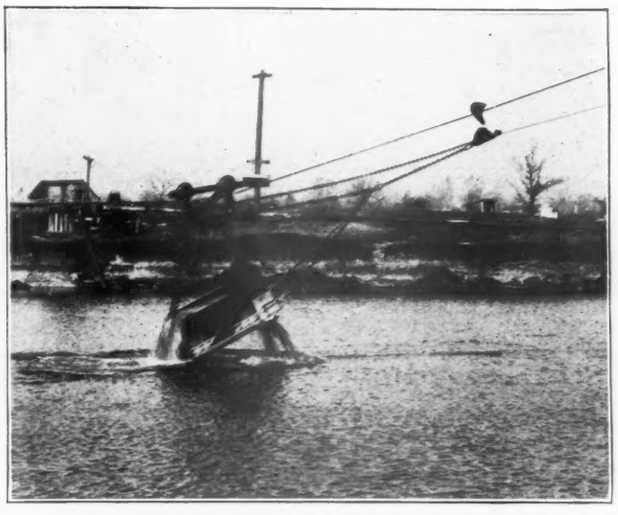
Here is another suggestion: Every industry in the world, regardless of size, must buy as well as sell. Next time you buy, instead of asking for prices and selecting the cheapest, why not pick out the product that looks *best* and buy it, even though it may cost considerably more than the cheapest? The difference in cost between the best and the cheapest may then be charged to "research." Or carry it a little farther and buy both—the one that looks best as well as the one that is cheapest. Compare the two side by side under identical conditions. Probably you will find that it pays very well to invest a little additional money in *quality* products instead of buying soley on a first cost basis. That is *Research* and it is a kind of worthwhile research that can be indulged in by any business institution regardless of size.

New Sand and Gravel Plant Works Two Shifts Almost From First Day of Operation

Beyrer Bros. Sand and Gravel Co., at Mishawaka, Ind., Uses Slackline Cableway Excavating System

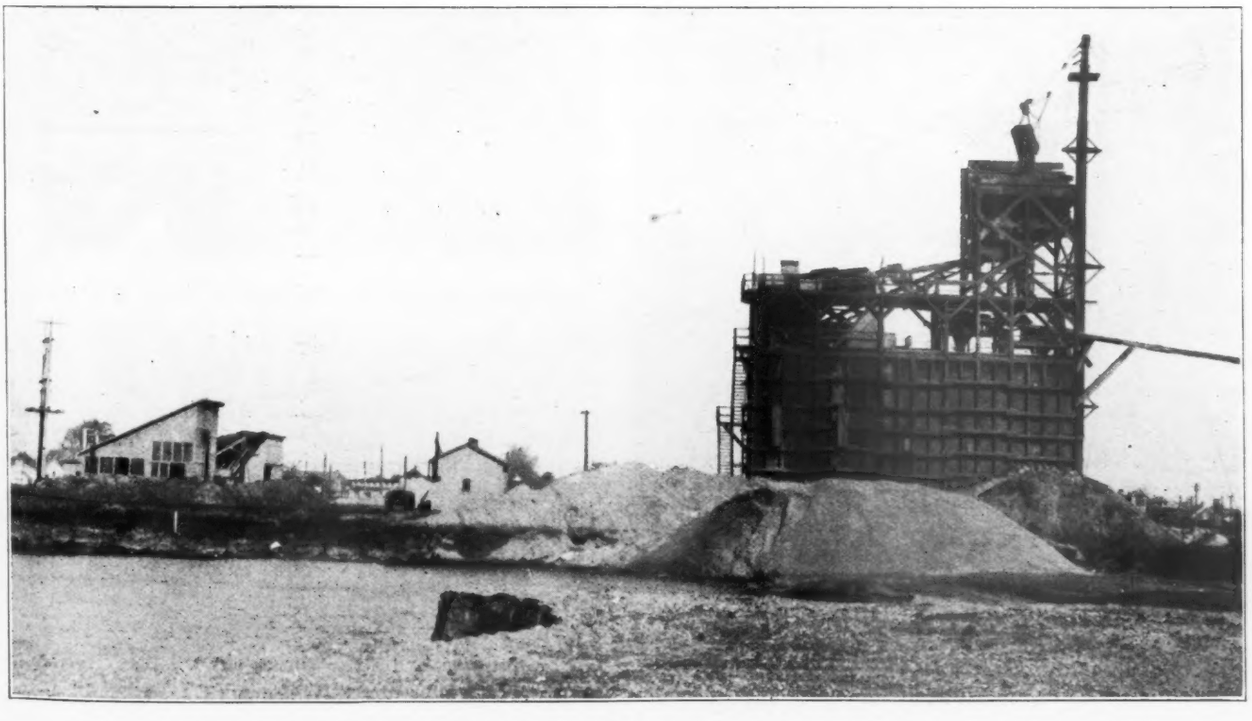
THE new plant of the Beyrer Bros. Sand and Gravel Company, at Fifth and Wenger Streets, Mishawaka, Ind., went into operation on July 12, 1929, and started night operations on the 21st of the same month. During the remainder of the season the plant averaged 22 hours per day. This would seem to indicate that the plant was badly needed. The territory about South Bend is rapidly becoming a leading industrial section with many large industries already being located there and more being added from time to time. The growth of the city of South Bend in itself clearly illustrates this rapidity of development, having increased in population from 76,709 in 1923 to over 120,000 at present.

The property on which the plant is located consists of 35 acres a mile southeast of the business center of Mishawaka. The 1½ ft. of sandy loam overburden is removed by a General Excavator gasoline crawler crane with a ½-yd. Owen bucket. Some of the stripped material is sold for gardens and lawns in the vicinity and the remainder is piled to one side. The deposit runs about 45 ft. deep and averages about 70 per cent sand with from 3 to 5 per cent of the gravel being over 2½ in. in size. The pond at present is about 300 ft. wide by 300 ft. long.



Excavating bucket emerging from pond with load of sand and gravel

Excavating is being done with a Sauerman slackline cableway excavator with a 1¼-yd. Universal bucket and a present span of 700 ft. This system has a capacity of about 70 cu. yd. per hour at ordinary distances and depths. Digging is now being done at a depth of from 40 to 45 ft. at the rate of about 60 cu. yd. per hour.



General view of Beyrer sand and gravel plant showing bucket dumping to hopper. Hoist house at left

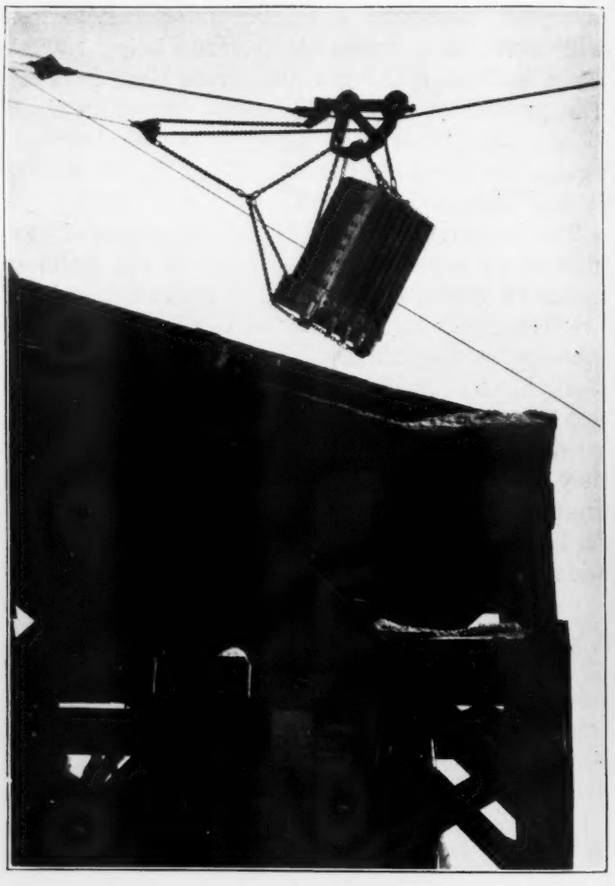
Hoist house and outdoor transformers. Note arrangement of windows

The built-up timber mast is 102 ft. high. The hoist house is located at approximately right angles to the excavating line and was designed with an unusually large amount of windows to take advantage of all the natural light possible. It is a wood frame building with concrete floor and foundations. The cableway is operated by a Lidgerwood two-drum hoist gear driven by a 60-hp. General Electric motor, which gives speeds of 200 and 600 f.p.m. respectively for loading and hauling. Sauerman "Special Excavator" 1⅜-in. 6-strand, 19-wire, hemp core cable is used for the track cable and Broderick and Bascom "Yellow Strand" cable for the operating line. Sauerman cable is also used for guy lines for the mast.

The two-drum hoist which operates the cableway excavator system

Plant Operations

The excavator bucket dumps onto a sloping rail grizzly, spaced 6 in., at the top of the plant. The oversize drops to a waste pile and the stone under 6 in. to a hopper. This discharges into a wash box where the sand and gravel is washed by a 3-in. jet of water. The wash box discharges through a 20-ft. sluiceway into the Telsmith 40-in. by 18-ft. heavy duty sizing screen where another 3-in. jet gives a further washing. This



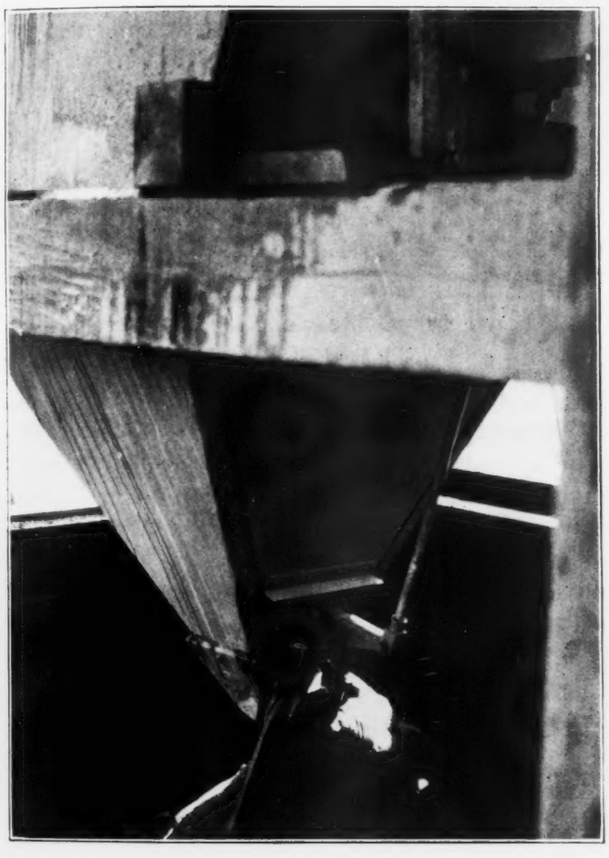
Bucket dumping onto rail grizzly at top of plant

screen has 2¼-in., 1½-in., and ⅝-in. perforations on the main barrel and a 6-ft. sand jacket with ¼-in. slots. The screen is gear-driven by a 10-hp. General Electric motor. A 32-in. by 18-in. stationary screen in the sluiceway takes out some of the excess sand ahead of the screen.

The oversize, 2¼-in., to 6-in., from the sizing screen, goes through a chute to the Telsmith gyratory crusher. This discharges onto a 16-in. belt conveyor on 54-ft. centers with a slope of 25 deg., which discharges the crushed gravel into the wash box to be rescreened. The sizes produced, 2¼-in., 1½-in., roofing gravel and pea gravel all go direct

to their bins through chutes. The fine material goes over an inclined stationary screen with ⅛-in. mesh which divides into two sizes of sand. Each size goes to one of the two Telsmith No. 7 sand-settling tanks which discharge into bins. The crusher is belt-driven by a 25-hp. General Electric motor and the belt conveyor by a 3½-hp. motor of the same make.

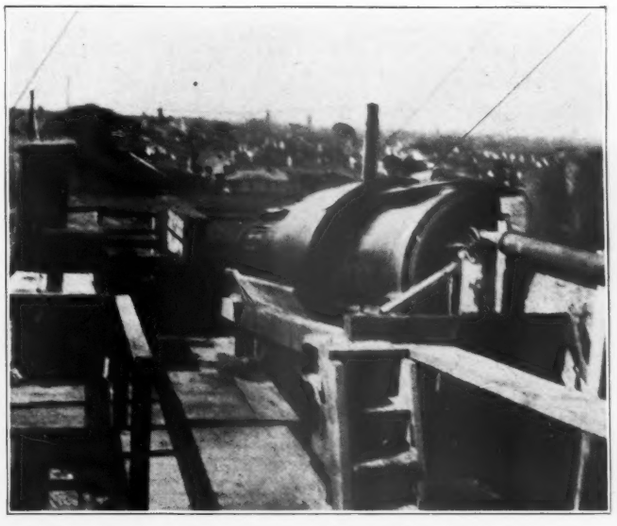
The five 200-cu. yd. capacity bins, in common with the remainder of the main plant structure, are of double creosoted timber construction. One of these bins has been partitioned into two compartments since the plant was erected. One-half



One of the two 7-ft. sand-settling tanks

is used for pea gravel and the other for roofing gravel. The bins discharge through side-discharge drop chutes directly into trucks on a concrete roadway alongside the bins. Three trucks are owned by the company, all International's, one with 3-yd. and the other two with 1½-yd. capacities. Any additional trucks needed are hired.

Any surplus material is hauled to stockpiles by trucks. This material is piled and later rehandled by the same General Excavator ½-yd. crane which does the stripping. Distribution is entirely by truck but the plant is only a few hundred feet from the main line of the New York Central railroad from which a spur track could be run at any time.

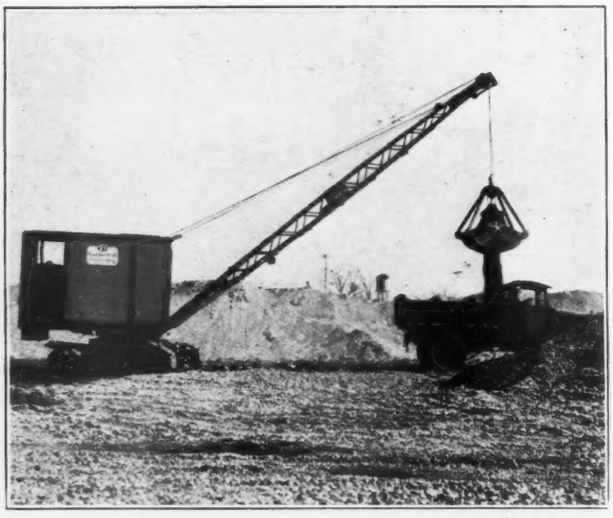


The jacketed sizing screen on top of the plant

Miscellaneous

Washing water is furnished by a Union Steam Pump Company centrifugal pump with a capacity of 850 g.p.m. at 90-ft. head. This is direct-driven by a 30-hp. General Electric motor and is located in a floating pontoon house in a small pond near the plant. Electric power is received at 440 volts which is used for all operations. Electric lighting current comes in over a separate line.

Truck being loaded from one of the bins



Gasoline crawler crane loading from stockpiles to truck

The smaller plant buildings are very neat, in keeping with the remainder of the plant. The machine and blacksmith shop is completely equipped to handle all small repairs and has a rack for small parts. A garage nearby houses the trucks when they are not in use. The office building houses both the main office and the plant office. An International No. 10-20 tractor is used for general purposes about the plant. An underground gasoline tank and pump are maintained on the grounds for the trucks, tractor and crane.

The plant is owned and operated by J. R. Beyrer and J. L. Beyrer, brothers, who also operate a roofing plant in South Bend which has been in the family for 35 years. Some of the material produced in the new plant is used there. Fred Heim, superintendent of the sand and gravel plant, designed it and was in charge of construction.

Supt. Fred Heim, left; J. R. Beyrer, right

Mining Laws of Turkey[1]

By John W. Frey[2]

Note.—*This paper presents one of a series of digests of foreign mining legislation and court decisions which is being prepared in advance of a general report relative to the rights of American citizens to explore for minerals and to own and operate mines in various foreign countries. This interpretation of the laws of Turkey, as prepared from the best available information in Washington, has been slightly amplified in accordance with suggestions transmitted through the courtesy of the Department of State by Joseph C. Grew, American Ambassador to Constantinople.*

All mines situated within Turkish territory are State property. Concessions for their exploitation must be approved by the Grand National Assembly of Turkey prior to their going into effect.

Concessions are generally granted for 99 years. The concessionary has the option of forming a company, organized and constituted under Turkish law, within one year from the date of the concession.

In corporations, the president of the board of directors, general manager, auditors, and at least one-half of the members of the board of directors must be Turks.

The portion of the profits which the concessionary is required to turn over to the State and to the labor and personnel employed, in addition to the taxes stipulated in the mining regulations, is levied upon the excess profits—the balance remaining after the deduction of 9 per cent interest for the concessionary from the net profits. This portion varies from 10 per cent levied on excess profits less than 10 per cent of the capital, to 40 per cent on excess profits amounting to 85 per cent of the capital or more.[3]

On March 24, 1926, the Turkish Grand National Assembly voted a law granting to the Government the right of the exploitation of petroleum and bitumin deposits and their natural derivatives. The Government can either make use of this right itself or can concede it to an individual or society.

[1] Reprinted from U. S. Bureau of Mines Information Circular 6188.

[2] Associate Mineral Economist, U. S. Bureau of Mines, Washington, D. C.

[3] Turkish Mining Regulations, March 26, 1322 (1906). Certain articles of these regulations have been modified by Law No. 608 of April 12, 1341 (1925).

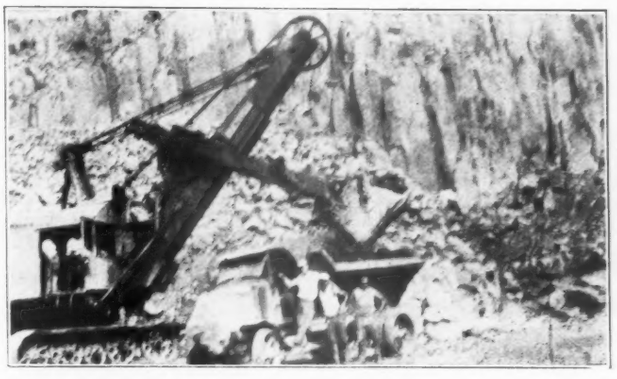
Unique Features Distinguish Modern Trap Rock Plant on Hudson River Palisades

Regenerative Braking on Down-hill Conveyor Returns 7-hp. to Power Lines of New York Trap Rock Corporation

By F. A. WESTBROOK

ONE of the most up-to-date large trap rock operations in the East is the Haverstraw, N. Y., plant of the New York Trap Rock Corporation, originally built by the Tomkins Cove Stone Company before its consolidation with the former firm. The plant has now been in operation about three years and more than a year was required to construct it. Its layout shows unusual ability and ingenuity of design; the machinery is of high quality and well selected for the work which it is to perform. One of the most convincing proofs of this is that a production of 4,000 cu. yd. per day is turned out with a force of only eighty workmen. The plant was designed by President Tomkins, of the Tomkins Cove Stone Company, and his engineers, and was erected by the Burrell Engineering Company.

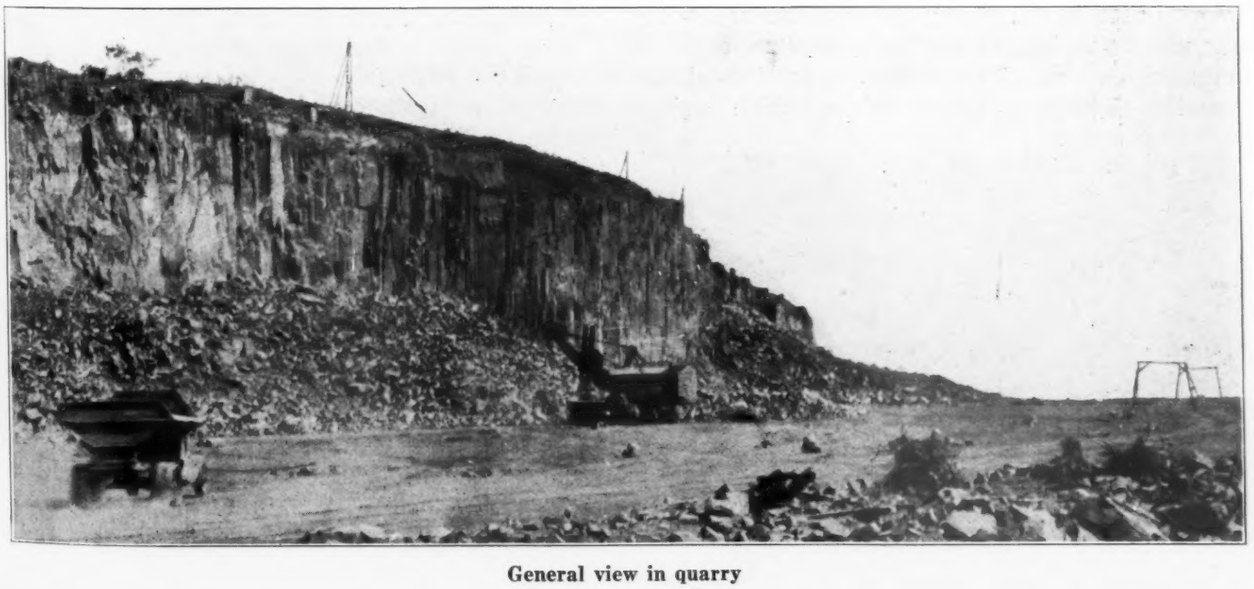
The quarry is situated on one of the high hills overlooking the west shore of the Hudson river, immediately south of the village of Haverstraw, only a few miles from the northern extremity of the famous ridge of trap rock, well-known as the Palisades of the Hudson. By the time that the various crushing, screening and washing operations have been completed the rock has arrived at the bank of the river, nearly one-half mile from the quarry where it is loaded on barges for shipment. In many ways the layout is most unusual and interesting from an engineering standpoint, especially in regard to the utilization of the local topography. This will become apparent as the flow of the plant is described.



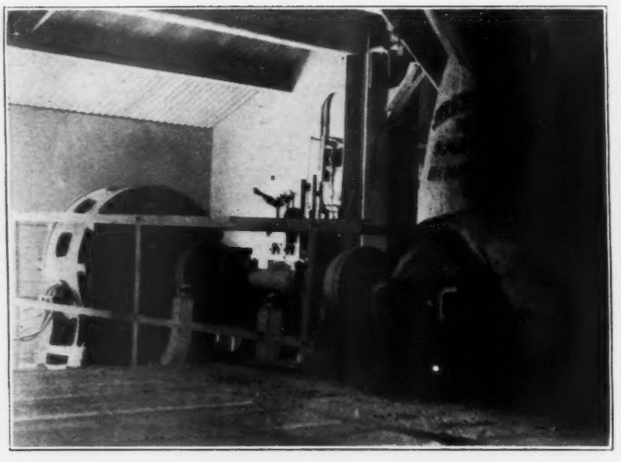
Loading truck in quarry

Drilling and Blasting

When the quarry was first operated, drilling was done with drifter-drills. As the breast was pushed back and became higher, however, it became necessary to use well drills and now there are six Super Cyclone electric drills equipped with Gill bits doing this work. Secondary drilling is done with Ingersoll-Rand R-23 and R-12 Jackhamers. The drill holes are 8 in. in diameter and are sunk 30 ft. back from the quarry face and are 22 ft. apart. At present, the breast is 95 ft. at its highest point. Drifter drills are still being used at one end where the breast is only about 40 ft. high. Eventually, however, the maximum height will be 120 ft. and



General view in quarry



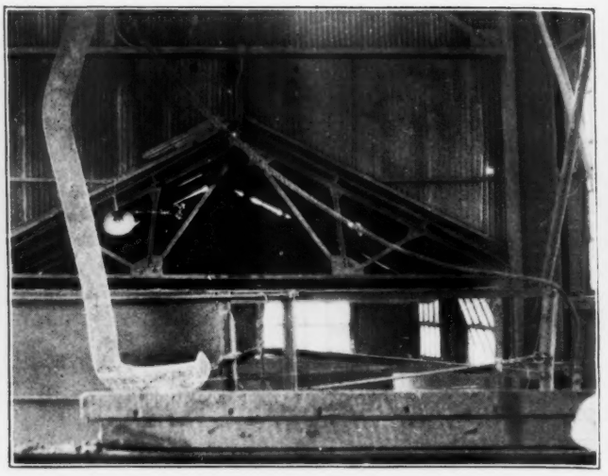
Motor drive for 10-in. crusher. Switches permit reversal of motor in case of jam or if loaded crusher be stopped by power failure

this, with variations, may be extended for a long distance to the south. In the lower portion of the holes, 75 per cent dynamite is used, 60 per cent being used in the remainder. The explosive is especially made up in 50-lb. cartridges 7 in. in diameter and 24 in. long. The bottom charge is let down into the hole by a string and the balance is dropped in. About ten holes are shot at a time.

Four electric shovels pick up the rock. Two of these are 100-B Bucyrus-Erie and the other two are Type 37 Marion. These shovels load the stone into Mack trucks equipped with special side-dump bodies with an average capacity of about 5½ cu. yd. Nine of these trucks are in service, seven with the shovels, one in reserve and one in general use. The trucks have made a remarkable hauling record. The average number of daily loads carried per truck varies from 56 for the longest haul to 120 for the short trip to the shovel nearest the primary crusher. The record performance for nine trucks is 1,035 round trips in eleven hours.

An interesting device, observed for the first time, is used in the quarry. It consists of a portable wooden underpass, similar in appearance to an enormous carpenter's saw-horse. Over this structure the eight long flexible cables, which supply

Showing method of feeding the 10-in. crushers

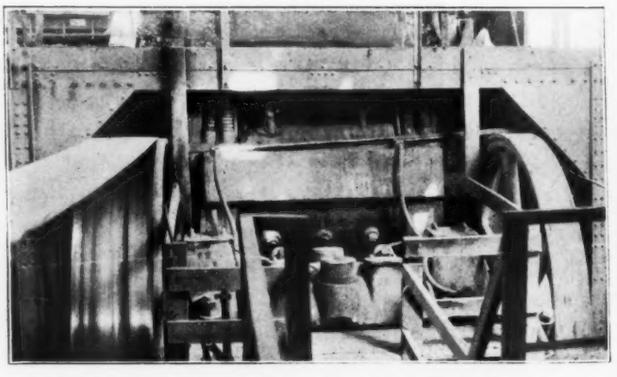


Hook suspended from auxiliary crane over jaw crusher

power to the electric shovels and well drills, are draped allowing the large trucks to pass underneath when the cables must of necessity cross any of the routes. All of the flexible power cables, as well as the eight cords, are of the rubber sheathed type.

Primary Crushing

The primary crusher house is on the quarry floor level. It is so arranged that the trucks may drive in one side, dump their loads, and pass straight out

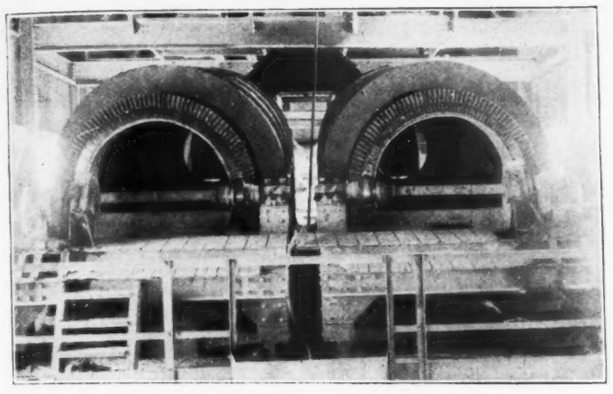


Partial view of 48-in. by 60-in. jaw crusher

through the other side. The trucks are dumped by means of a small, compressed-air-driven Lidgerwood hoist fitted with a large hook which engages a ring on the side of the truck body. A 20-ton Pawling & Harnischfeger traveling crane with a 5-ton auxiliary hoist operates over the crusher to loosen jams and facilitate repairs.

Primary crushing is done by a 48-in. by 60-in. Traylor jaw crusher. From this the stone descends by gravity to the next crushing operation at a lower level. There are two secondary crushers, both 20-in. Allis-Chalmers Superior McCully gyratory crushers which discharge into a large concrete hopper. Both primary and secondary crushers are in building No. 1. A 36-in. belt conveyor, with a Cutler-Hammer magnetic pulley at the end, carries the crushed stone from the concrete hop-

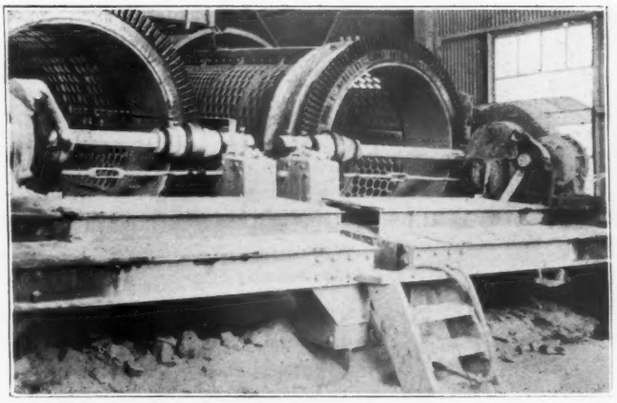
per to building No. 2. This conveyor, as do all others in the plant, runs on Robins idlers. In building No. 2 the stone is discharged from the conveyor into two 5-ft. by 16-ft. Traylor revolving screens. These screens perform two functions—(1) they separate the commercial sizes from those which are too large and (2) being provided with jackets, they separate the dirt and dust from the mixture of commercial sizes. This dirt drops to a 30-in. conveyor which deposits it in a bin, where it is drawn off from the bottom into a 3-ton truck which carries it off to the dump.



One pair of revolving primary screens

Next comes the mixture of commercial sizes. These have been retained on the jackets of the Traylor screens and drop onto a 30-in. conveyor, about 100 ft. between centers, which deposits it in concrete silos under building No. 3. There are two of these silos, each holding 500 cu. yd.

The oversize from the revolving screens drops onto two 10-in. Allis-Chalmers Superior McCully gyratory crushers in the lower part of building No. 2. After passing through these crushers the stone travels downward by gravity to a 30-in. conveyor which carries it to two Traylor 5-ft. by 16-ft. revolving screens in building No. 3. The commercial sizes drop into the silos under the building and the rejects pass by gravity into two 4-ft. Symons cone crushers and then by conveyor belt to two 4-ft. by 20-ft. revolving screens which both scalp, returning the oversize to the cone crushers to furnish



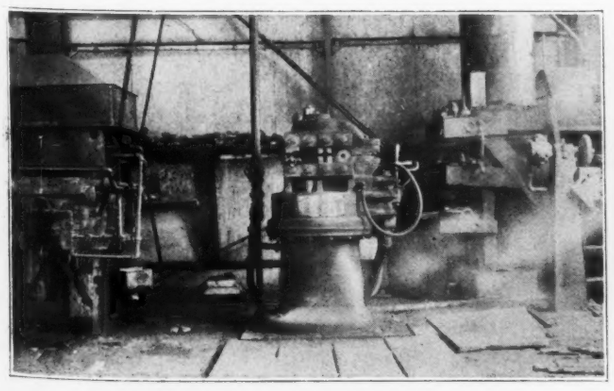
All stone from primary crushers passes these revolving screens

four sizes of stone for truck loading, the surplus truck stone being taken away by the same belt which draws off from the bins under the cone crushers. With each step, it will be seen, the material passes to a lower level down the slope toward the river. The buildings referred to, No. 1, No. 2 and No. 3, are located one below each other so that the conveyors, running from the bottom of one building to the top of the next, are nearly horizontal.

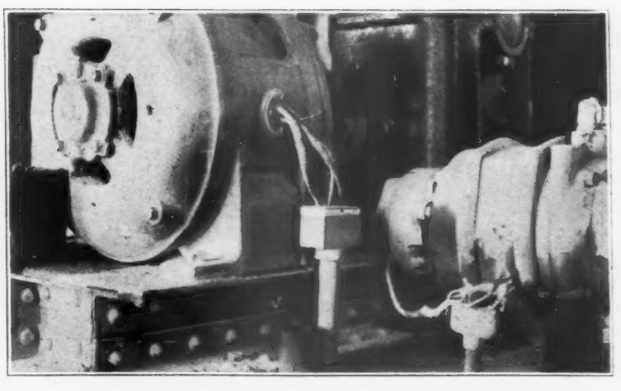
Sizing Operations

With all of the material in the silos under building No. 3, the flow of material becomes highly interesting. Rock for all subsequent sizing operations is taken from these silos which are ordinarily kept as nearly empty as possible. This is done because, should there be any delay below, such a break-down of machinery, docking of barges or anything which might make it necessary to stop operation, the crushers may continue to run, the stone having ample space to pile up in the silos.

A 30-in. belt conveyor, 850 ft. long between centers, extends from the bottom of the silos under building No. 3 to the top of the sizing plant. This conveyor passes through a tunnel under a shoulder of the mountain, under the state highway forming part of the famous Storm King Mountain route, and crosses on a closed bridge over the West Shore



Forge, drill sharpener, and fuel tank



All motors in the plant are equipped with roller bearings

Heavy machinery is hauled up this incline to upper buildings and quarry

Railroad to the buildings on top of the final concrete storage silos where sizing operations take place. It is interesting to note that this conveyor carries its load down hill so, instead of having a motor to run it, it is braked by a generator which restores power to the plant to the extent of 7 hp. It is certainly a novel application of regenerative braking.

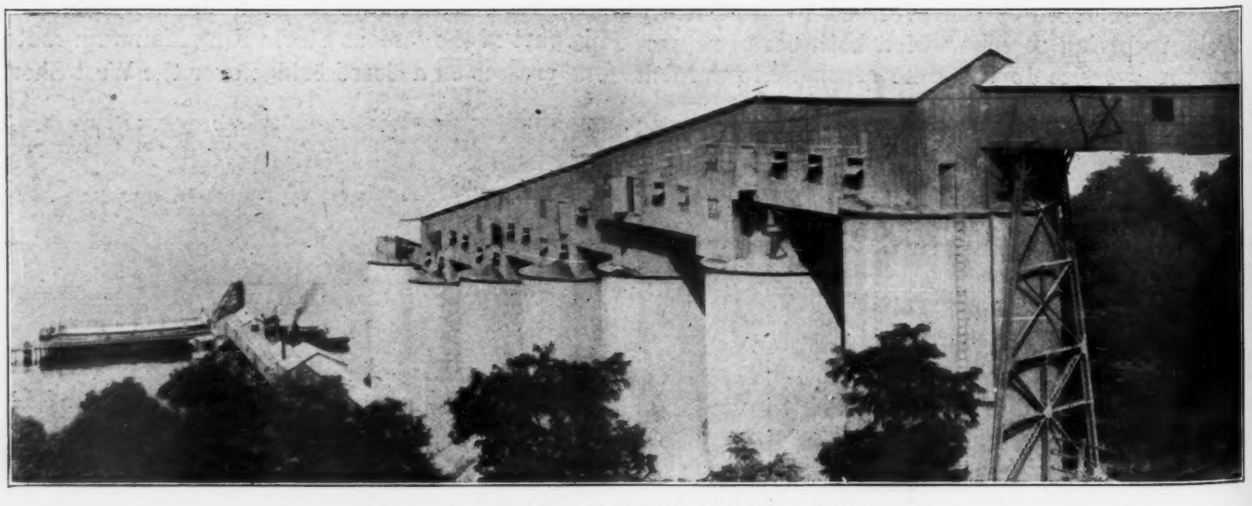
The first sizing at the end of this long conveyor is done by two Traylor 5-ft. by 16-ft. enclosed revolving screens. The rejections from these are the 1½-in. sizes which drop into a concrete silo below.

The stone passing through the above screens falls into a hopper from which it feeds onto a 30-in. conveyor about 30 ft. between centers. This takes it up an incline to another pair of Traylor 4-ft. by 16-ft. revolving screens. The rejections here are the 1¼-in. size and they drop into another silo.

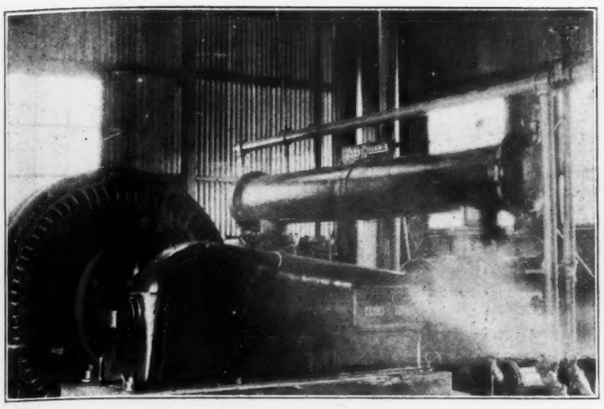
Portion of four vibrating screens

Material retained on these screens is carried by a similar 30-in. conveyor to two sets of tandem Hum-mer screens, made by the W. S. Tyler Company. Here the rejects are the ¾-in. size which drop into the silo containing that size. All these operations are greatly simplified since there is room enough for them to proceed in a straight line.

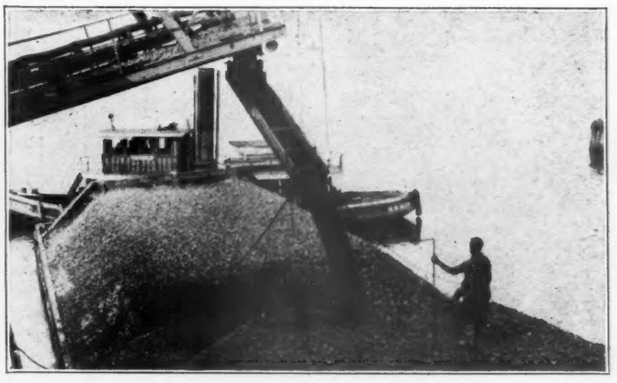
The throughs from this first set of Hum-mer screens go by a 20-in. conveyor to a second set of tandem Hum-mer screens where the ⅝-in. size is removed. A 20-ft. conveyor takes the throughs to two more sets of tandem Hum-mer screens. These separate the ⅜-in. size from the dust. The ⅜-in. material drops into a silo under the screens while the dust is carried off by a final 20-in. conveyor to another silo. Thus each of the six sizes is deposited in a separate silo. There is a seventh which is used for special sizes—usually 2½-in.—which are only occasionally in demand. The seven storage silos are all in a straight line and each on a lower level than the one preceding on the descent



Screen house above silos, loading dock in distance



One of the air compressors



Method of loading barges

toward the river. Beneath them is a tunnel with spouts to a 30-in. belt conveyor, 300 ft. between centers, leading to the wash house where all stone, except dust, is washed before loading on barges.

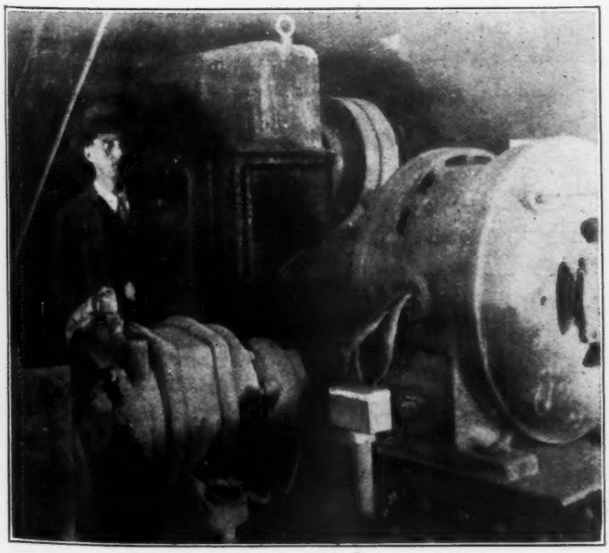
Washing and Loading

The washer in use is a simple one, designed by the master mechanic of one of the company's other plants and consists of a series of baffles over which the stone descends while water is sprayed over it. Results obtained have been so effective that it is being installed in the other plants of the company.

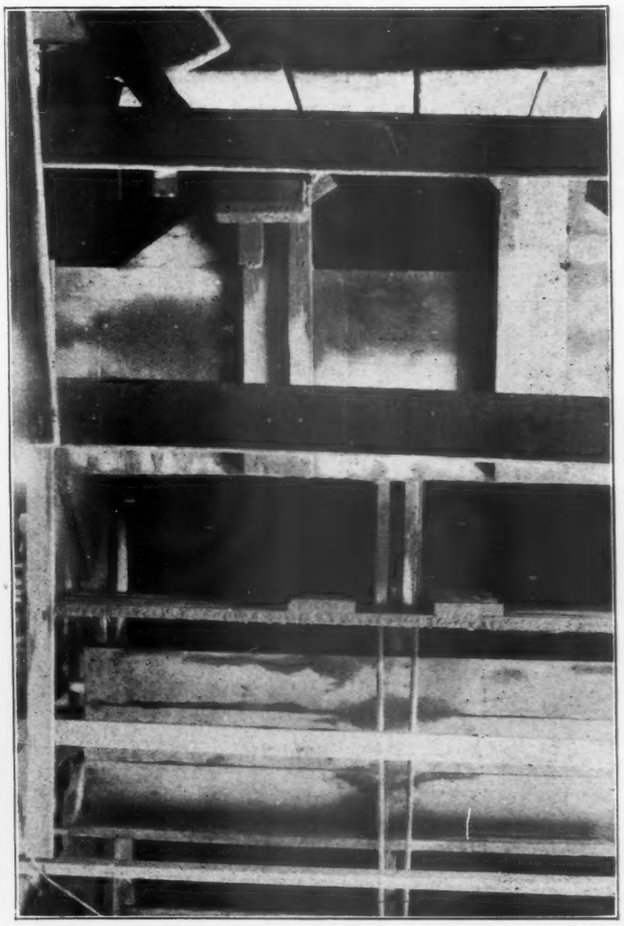
The washed stone is transported from the bottom of the washer by a 30-in. belt conveyor, 90 ft. between centers, to a hopper on the dock and at that point the 30-in. conveyor, 40 ft. between centers and at right angles to the long line, takes the stone over the steel loading boom to the chute which is hung from it over the barge.

Among the other interesting details is the compressed-air plant. Air is supplied by two Pennsylvania 2-stage units, driven by 200-hp., 2,200 volt General Electric synchronous motors. The compressors are located in the same building which houses the blacksmith shop and is on the same level as the floor of the quarry and close to it. Compressed air is piped to the quarry to serve jackhamers and drifter-drills and to all parts of the plant so as to be available for blowing out motors. It also operates the hoist which dumps the quarry trucks. The blacksmith shop is equipped with an Ingersoll-Rand oil furnace and an Ingersoll-Rand drill sharpener.

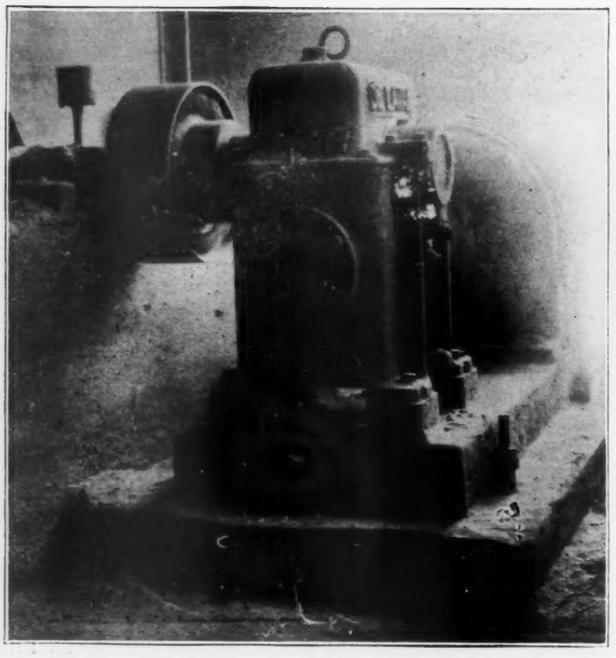
An unusual feature in a quarry of this kind is the three-track incline to the floor of the quarry from the level of the main road. This incline, while not in everyday use, does excellent service when



Speed reducer between motor and washer conveyor



Washer designed by company, and known as Berry washer



Speed reducer between motor and belt conveyor from silo to boat loader

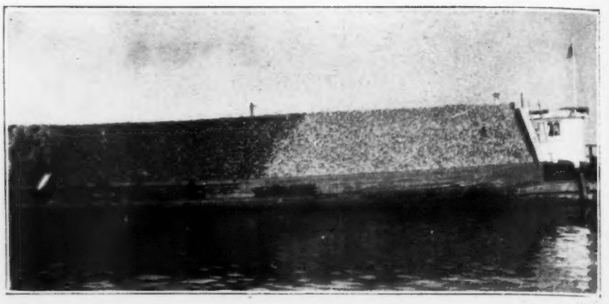
necessary in hauling up heavy pieces of machinery and supplies which are difficult to carry in trucks over the steep private roadway. It was used a great deal during the construction of the plant. The car operating on this incline is pulled by Roebling wire rope attached to a Lidgerwood hoist powered with a 100-hp. Western Electric motor.

Motors not already mentioned are as follows:

Primary crusher, 200 hp. Allis-Chalmers 2,200 volt, slip ring.

20-in. gyratory crushers—each, 150 hp. Allis-Chalmers 2,200 volt, synchronous.

Conveyor that carries stone from final crusher bins to silos and screen-house

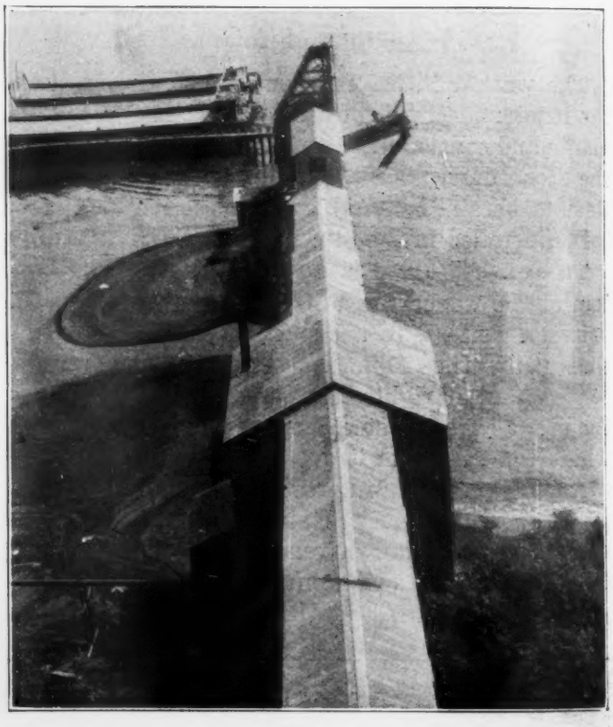


Boat load of finished product. Dark portion is still wet from washing

10-in. gyratory crushers—each, 100 hp. Allis-Chalmers 440 volt, slip ring.

Symons crushers—each, 100 hp. Allis-Chalmers 440 volt, slip ring.

All revolving screens—each, 20 hp. Allis-Chalmers 440 volt, slip ring.



Loading dock on river and washing plant in foreground

There are nine conveyor motors of various sizes proportionate to the length of the conveyors and all have De Laval speed reducers. The 20-in. crushers are driven through Cutler-Hammer magnetic clutches.

International Ball Is Feature Of Atlantic City Road Show

Social events at the annual convention and show of the American Road Builders' Association at Atlantic City, January 11 to 18, will include the International Ball, to be held in the Auditorium on Thursday evening, January 16. Another outstanding event of the show will be the road builders' banquet on Wednesday evening, January 15, at the Ambassador Hotel.

Iowa Gravel Plant Has Unusual Method of Handling Material From Dredges

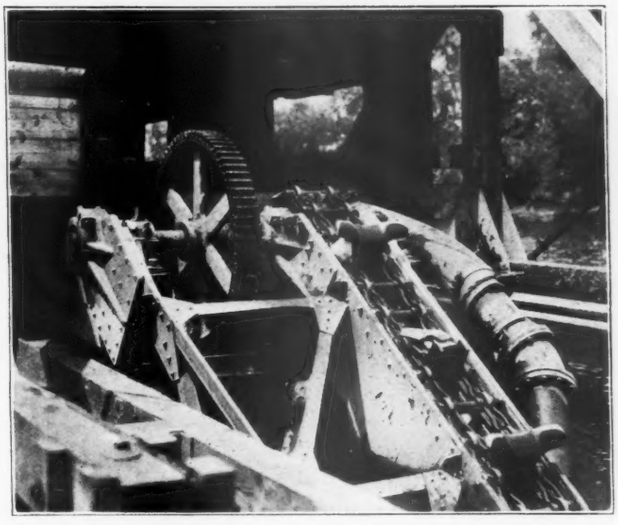
New Shore Plant Gives Accurate Control of Sand

THE Concrete Materials Corporation operates a sand and gravel plant near Eddyville, Iowa, which is interesting because of the unusual manner in which the material is handled. The plant is located on the Des Moines river 1½ miles north of Eddyville which in turn is about 16 miles northwest of Ottumwa. The main plant has been in operation a good many years but a new shore plant was added recently. The two dredges also are several years old but these have been modernized and a good deal of new equipment added.

Dredging Operations

The two dredges, operating on the Des Moines river, are of much the same type. The newer one was built about four years ago and a 40-ft. Eagle Swintek screen-nozzle ladder added this spring. The Morris 10-in. dredge pump is direct connected to a 250-hp. General Electric motor. A Worthington 4½-in. by 5-in. compressor primes the pump by suction, the operation taking about 2 minutes. The Eagle Swintek ladder is driven by a 15-hp. General Electric motor through a Manhattan Condor drive belt. A Thomas three-drum hoist, driven by a 20-hp. General Electric motor, raises the ladder and handles the two shore lines. Goodyear Style M suction hose and Cincinnati flexible couplings are used. About 1,000 ft. of pipe-line connecting the dredge with the shore plant is supported on wooden pontoons.

The older dredge has a 10-in. Amsco pump driven by a 200-hp. General Electric motor through Manhattan belting. The 40-ft. Eagle Swintek screen-nozzle ladder is driven by a 15-hp. motor. The dredge pump here also is primed by a Worthington compressor. A Thomas three-drum hoist handles the ladder and two shore lines. Cincinnati suction hose is used on the intake. This dredge has about 500 ft. of pipe-line. Hercules Red Strand Cable is used on both dredges.

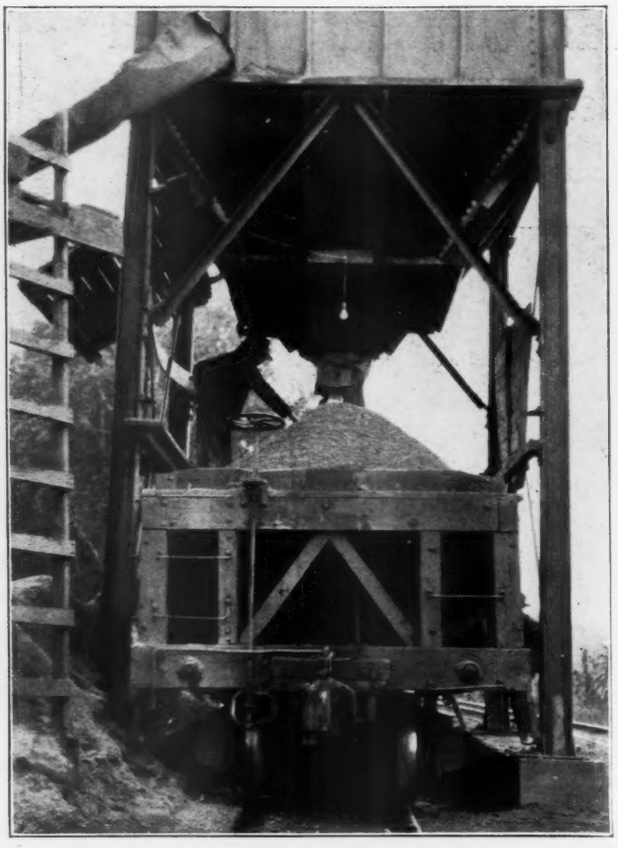


Screen nozzle ladder on one of the dredges. Note large stones being raised by the diggers

The Shore Plant

Both pipe-lines discharge into a steel-lined wooden hopper at the shore plant. This hopper has a steel rail bottom to resist the excessive abrasion

One of the two dredges on the Des Moines River



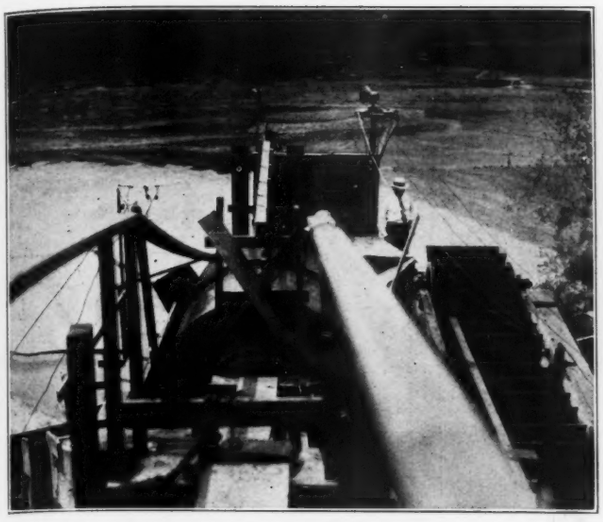
Loading a car under the hopper at the shore plant

Gasoline locomotive and cars loading at shore plant

caused by the continuous stream of gravel striking it. The gravel then goes through a steel-lined chute into a Toepfer 48-in. by 14-ft. revolving screen with a 72-in. by 12-ft. outer jacket. The main jacket has ½-in. round perforations and the outer jacket 7/32-in. and 9/32-in. slots. The screen is driven through Link-Belt silent-chain drive by a 15-hp. General Electric motor. Baffle plates in the screen break the force of the water as it enters.

Gates under the screen allow the wasting of any

Interior of the newer of the two dredges showing the A-frame and ladder hoists, the dredge pump in the background and the primary compressor at the right



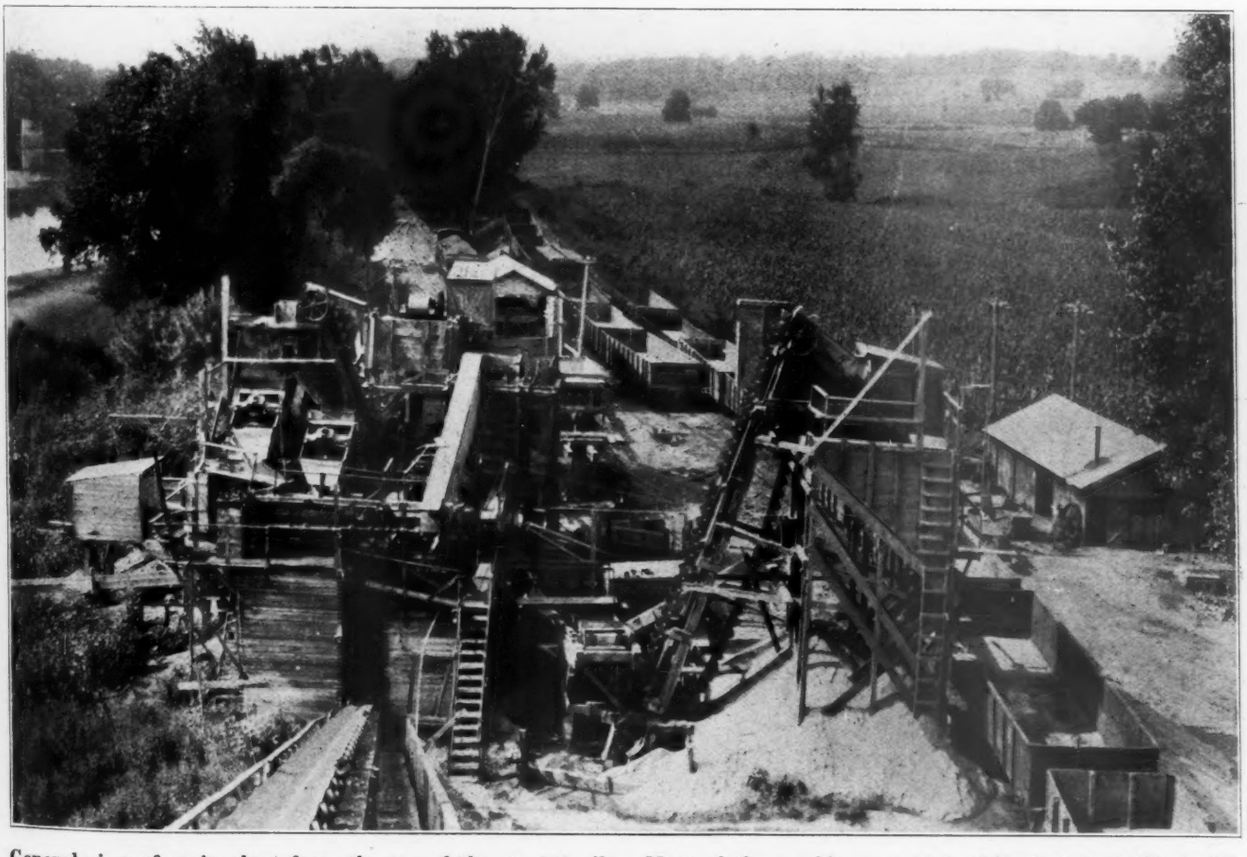
Revolving screen and sand box at shore plant. Dredge line on pontoons in background

Car discharging into hopper at main plant. Return conveyor from jaw crusher at left

part of the product desired. The waste material goes through a flume to an 8-in. Amsco dredge pump, driven by a 150-hp. motor, located in a small building near the plant. This pumps the waste several hundred feet down the river to a waste pit.

The sand from the screen goes to a Link-Belt 42-in. paddle wash-box for dewatering. This discharges onto a 30-in., 125-ft.-centers Link-Belt inclined conveyor with Cincinnati Arno belting, joining the remainder of the material from the scalping screen. This conveyor is driven at the rate of 400 f.p.m. to prevent slipping of the wet material. It is gear-driven by a 15-hp. General Electric motor through a Morse silent-chain drive and the wash box by a 10-hp. motor of the same make.

The conveyor discharges into an 80-ton-capacity steel hopper on concrete foundations furnished by the Pittsburgh-Des Moines Steel Company. This discharges through Link-Belt Duplex gates into



General view of main plant from the top of the storage silo. Most of the machinery used in this plant is visible in this picture. Machine shop at right

The sand drag box at the shore plant. Revolving screen at left

cars on a narrow-gauge track under the bin. Three trains of two 20-ton bottom-dump cars each are hauled a distance of 1 mile to the main plant. This system allows continuous operation at both ends, as one train is being loaded at the bin and another unloaded at the main plant while the third is being hauled.

Two of the screw washers at the main plant with sand drag box in the background

The Main Plant

At the main plant the cars are run up an inclined trestle into the hopper building where they are dumped into a steel-lined wooden hopper. A chute leads to a Link-Belt pan-feeder which discharges onto a 24-in., 120-ft.-centers inclined belt conveyor to the top of the screen house. The conveyor is gear driven, at its head pulley, by a 15-hp. General Electric motor and drives the feeder by chain from its tail pulley.

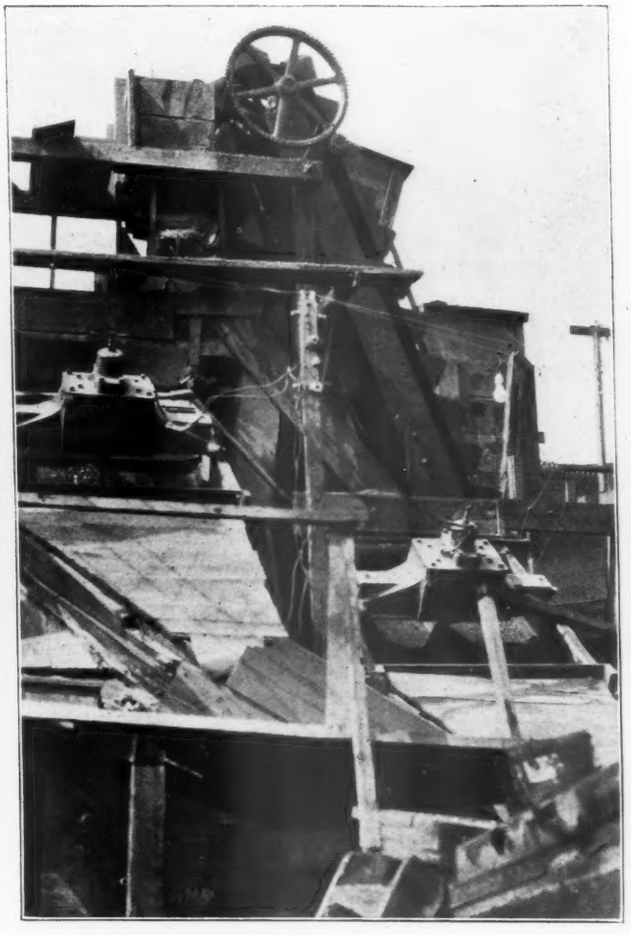
The conveyor discharges into a steel-lined hopper where a 10-in. jet of water washes the material as it goes into a Johnson-Chapman conical scalping screen with 2-in. perforations. The oversize is chuted to an 8-in. by 24-in. Universal jaw crusher

The main plant from the southwest with the storage silo at right

The main conveyor to the concrete storage bin

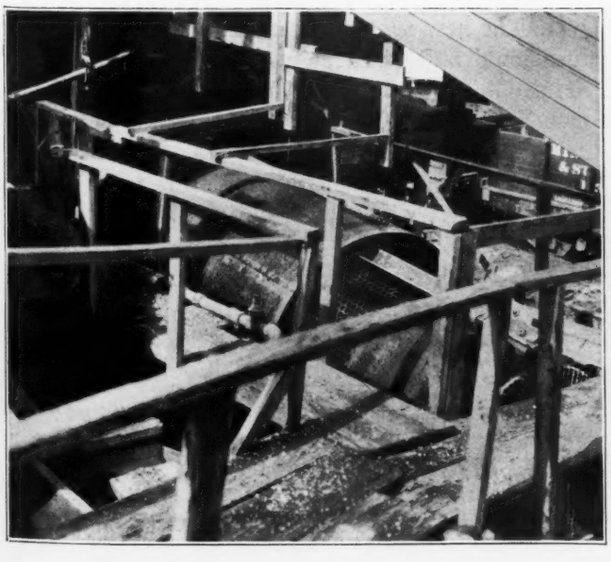
which discharges onto a Weller inclined return conveyor to the car hopper. This conveyor is 18 in. wide and on 120-ft.-centers and is driven through Link-Belt gears by a 10-hp. General Electric motor. Goodyear conveyor belting is used.

The material going through the scalping screen goes to a Toepfer 48-in. by 12-ft. revolving screen with a sand jacket. The main barrel has ¾-in. and 1¼-in. perforations and the sand jacket 5/32-in. slots. The sand goes to an Amsco paddle wash-box for dewatering. The fineness of the sand here can be controlled by the wasting at the shore plant. The wash-box feeds a Weller belt-bucket elevator which discharges into a bin from which the sand is loaded directly into cars for shipment.

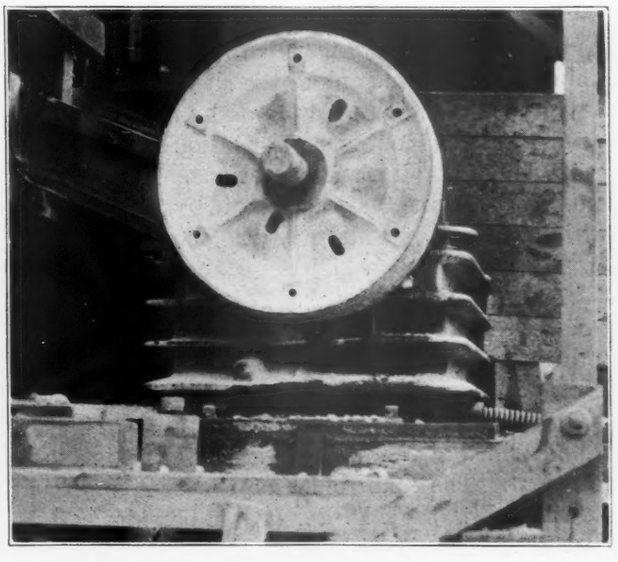


The two vibrating screens and the bucket elevator from the main sizing screen

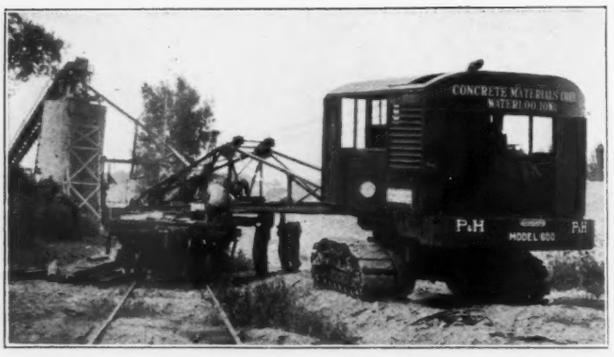
The ¼-in. to 1¼-in. gravel from the screen goes to another Weller belt-bucket elevator which feeds to two Hum-mer double-deck vibrating screens. These have ⅜-in. mesh on the upper decks and ¼-in. on the lower. The oversize from the vibrating screens goes to two Eagle screw-washers, and the pea gravel to a third Eagle screw-washer, all



The revolving screen at the main plant



The jaw reduction crusher at the main plant



Setting up the new 1-cu. yd. gasoline crawler crane

discharging directly into bins. The oversize from the revolving screen goes to two other Eagle screw washers which also discharge directly into bins. All of the washers and screens are chain-driven from the same 35-hp. motor.

The two large sizes of gravel may be discharged from their bins onto a 20-in. by 150-ft.-centers inclined belt conveyor to a concrete stave silo of 300-ton capacity which is used for ¼-in. to 2¼-in. road gravel only. Pea gravel also can be run onto this conveyor and discharged through a chute onto a stockpile. This conveyor is driven at its head by a Howell 20-hp. motor. Rehandling of material in stockpiles is done by a Byers gasoline crawler-crane with a ¾-cu. yd. bucket and a new P and H gasoline crawler-crane with a 1-cu. yd. bucket. This had just been received at the time the visit to the plant was made. Most of the conveyors are Link-Belt, and Cincinnati belting is used throughout.

The plant has a capacity of 50 cars in a 20-hour day. The demand created by the state highway program and the number of city streets and bridges being built have made night operation necessary the greater part of this year. Flood and incandescent lights over the entire operation furnish illumination for night work.

Wash-water for the plant is pumped by a 6-in. Dayton-Dowd and an 8-in. Worthington centrifugal pump located on the bank of the river. Power from the wires of the Iowa Power and Light Company is reduced, at an outdoor sub-station at the plant, to 440 volts for all plant operations. Each dredge also has its own transformer to 440 volts.

Shipments are made over the Minneapolis and St. Louis Railway which is connected with the plant by a 2-mile sidetrack. This railroad also connects with the Chicago, Rock Island and Pacific Railway, thus allowing shipments to be made in all directions.

A well equipped sales and superintendent's office is maintained at the plant. F. W. Wright is superintendent. The main office of the company is at Waterloo, Iowa. H. D. Bellamy is president, T. E. Rust is vice-president, and C. E. Oldham is secretary and treasurer. The company operates, in addition to this plant, two other sand and gravel plants in Iowa and a crushed stone plant in Missouri. The plant at Clarksville, Iowa, was described in the November 6 issue of PIT AND QUARRY.

National Crushed Stone Association to Meet at Cincinnati

The Thirteenth Annual Convention of the National Crushed Stone Association will be held at the Hotel Gibson, Cincinnati, Ohio, January 20 to 22, 1930, and will be followed on January 23, the day immediately thereafter, by a Trade Practice Conference for the entire crushed stone industry, and held under the auspices of the Federal Trade Commission.

As has been the custom in the past, the Manufacturers' Division of the Association will hold its annual exposition of quarry equipment and machinery, and it is now assured that this exposition will be larger both from the number of exhibitors, and the amount of floor space occupied than any previous exposition. It has been estimated that there will be over 700 in attendance at the convention and it can conservatively be stated that the number will fall between 600 and 700.

The railroads have authorized the round-trip indentification plan, and certificates have been mailed to all members of the Association, which, when presented at the ticket office, will permit members to purchase their round-trip transportation on the basis of fare and one-half or fare and three-fifths for the 30-day extension limit.

Asphalt Producers Form New Organization

The Asphalt Institute, a new organization whose membership is made up of the producers of asphalt and asphaltic oil responsible for more than ninety per cent of the production east of the Rocky Mountains, succeeded The Asphalt Association on January 1. The new organization will conduct extensive educational and research work.

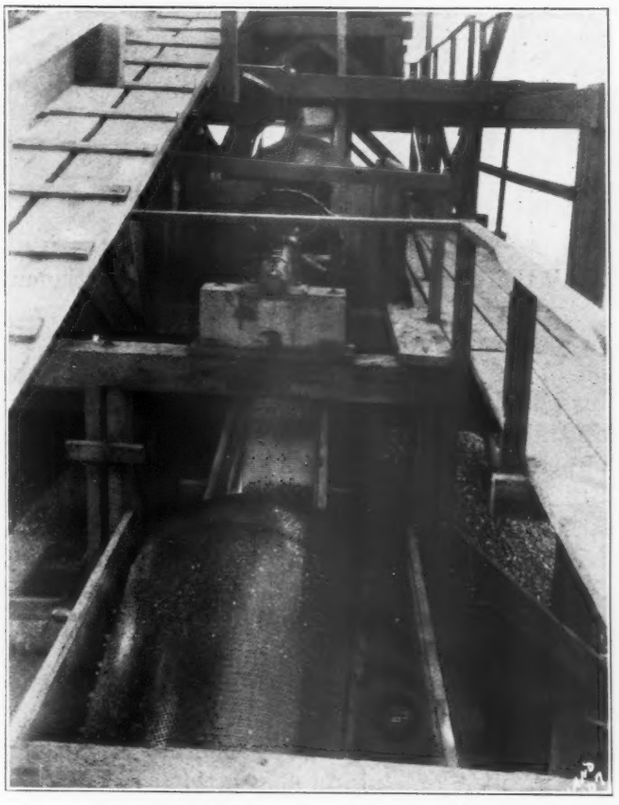
The officers of The Asphalt Institute who will serve during the brief period until the first annual election in March, are as follows: Joseph S. Helm, Standard Oil Company of New Jersey, New York, N. Y., chairman, Executive Committee; Leroy M. Law, Shell Petroleum Corp., St. Louis, president; William H. Kershaw, The Texas Company, New York, N. Y., vice-president; C. W. Bayliss, Barber Asphalt Company, Philadelphia, vice-president; B. L. Boye, Standard Oil Company of New York, New York, N. Y., secretary; Fisher Jones, Mexican Petroleum Corporation, New York, N. Y., treasurer, and J. E. Pennybacker, New York, N. Y., managing director. The Asphalt Institute, as did The Asphalt Association, will have its offices for the present at least, at 441 Lexington Avenue, New York, N. Y.

Reversible Belt Both Loads and Stores Material at Glacier Sand and Gravel Plant

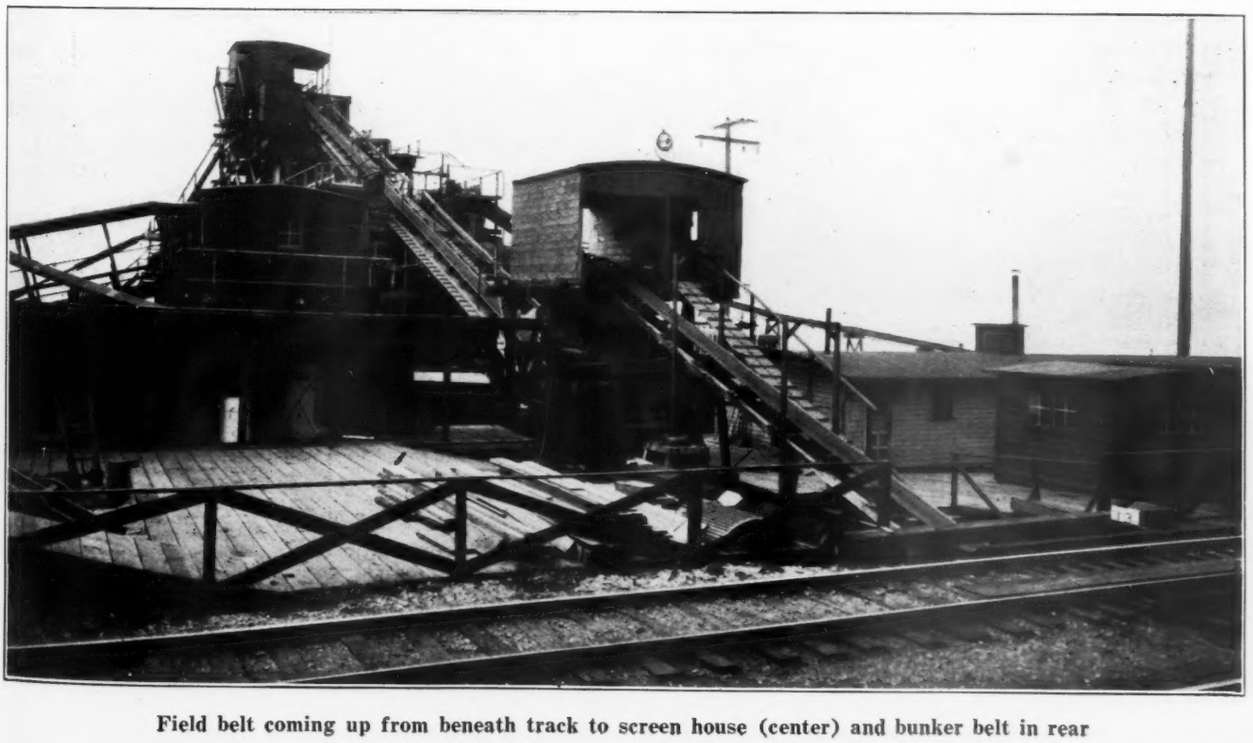
Shipments to Nearby Markets Are Made By Rail and Water

By CHAS. F. A. MANN

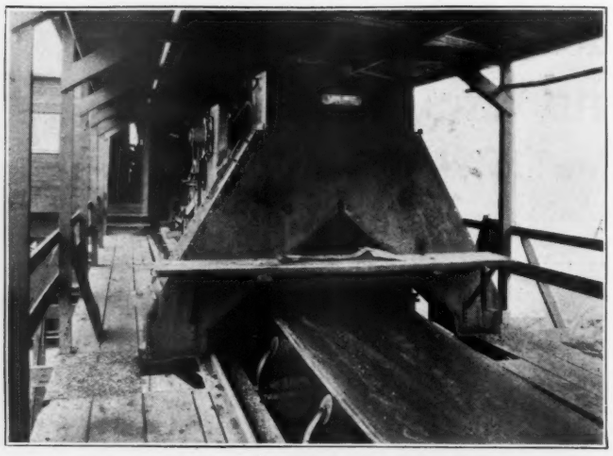
THE Glacier Sand and Gravel Company is developing one of the finest and largest sand and gravel deposits on the Pacific Coast, comprising the large peninsula forming the west bank of Chambers Creek, located a few miles south of Tacoma, Wash. The deposit averages about 350 ft. in thickness and is of remarkably uniform composition, it being the approximate mid-section of the old moraine that forms a large part of Southern Pierce County. It is located on tidewater, with a main line railroad track running along one entire side. Geologists have estimated that there is approximately 750,000,000 cu. yd. of material available without going below high-tide level, or sufficient to supply the plant for about a thousand years at its present producing capacity. The company owns about 1,400 acres of deposits a mile or so further north along the waterfront. Underlying the deposit are fresh-water springs, ideal for washing the materials. This is an advantage, since other plants in this area must pump salt water for washing from Puget Sound. One small spring, located in a tunnel through which material is brought from the pit, is supplying 3,000 gal. of water a minute, enough to take care of the entire needs of the plant.



Two rotating screens with chain drive



Field belt coming up from beneath track to screen house (center) and bunker belt in rear



Traveling tripper on storage belt

All the elements necessary to insure continuous operation on a large scale are thus available: practically inexhaustible resources of high and uniform quality; fresh and salt water in limitless quantities for all purposes; low water and rail freight-rates; central electric power; nearness to markets; and plentiful labor supply. The Glacier Sand and Gravel Company was organized two years ago by J. T. Heffernan, of Seattle, and his son J. T. Heffernan, Jr., to take over the small plant of the old State Gravel Company and develop the business on a wholesale scale.

With a wide background of engineering and railroading experience, the Heffernans took control of the plant and the deposit and invested $500,000 in new equipment. Instead of adopting the customary practice of sluicing down the raw material through an elaborate trough and piping system, they adopted the plan of handling all materials through the plant and into cars and scows in a dry or nearly dry state. This called for the design of an intricate system of belt conveyors. After two years of operation, a program of improvements is now being completed. This program has included: increasing the size of all 24-in. belt conveyors in the plant to 42-in.; increasing the plant's capacity to 1,000 cu. yd. of finished product per hour; erecting a 90-car track storage plant with automatic bunkers; erecting a car-washing plant; and adding track scales and a locomotive for switching cars, and other provisions for water and rail shipments on a large scale. About $150,000 is being spent for new equipment this winter to make the plant one of the largest and most modern in the Northwest.

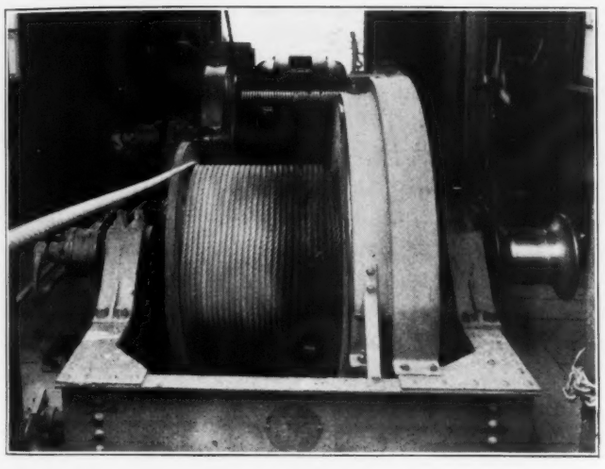
The 42-in. belt conveyor above the storage piles

The deposit averages 60 per cent gravel and 40

General view from north side of pit, storage at left, bunker and dock at right

per cent sand, with practically no organic matter. Material is excavated by two dragline scrapers, each housed on a separate skidway made of heavy logs, securely bolted and braced to provide the foundation for the drums, motor and cable. The larger dragline is equipped with a 4-cu. yd. steel scraper made by the Bagley Grader Company, Tacoma. A double-geared, double-drum hoist, made by the Washington Iron Works of Seattle and driven by a 150-hp. variable-speed General Electric motor, is mounted and housed on one of the skids, and housed. The smaller dragline is equipped with a 2-cu. yd. Sauerman Crescent scraper, mounted on an open frame and driven by a 75-hp. variable speed General Electric motor.

Use of this nozzle prevents the upsetting of scows in bad weather or during loading of wet sand



Double-drum geared hoist operates large dragline bucket in pit

Scrapers discharge over an opening in the pit terminal of a heavily-timbered tunnel 600 ft. long, crossing under the railroad tracks to the plant. Running inside the tunnel is a 24-in. conveyor belt, 600 ft. on centers, traveling on Stephens-Adamson carriers. The belt travels at the rate of 350 ft. per minute and is driven by a 75-hp. Allis-Chalmers motor.

Material passes from the tunnel belt conveyor to a revolving grizzly which rejects all stone over 4-in. in diameter. A special dump scow of 250-cu. yd. capacity is provided for the oversize which is towed out into the bay and dumped as often as required. Undersize from the grizzly drops directly below to another belt, furnished by Stephens-Adamson Manufacturing Company, which is 200 ft. long, 42 in. wide and is inclined at an angle of 18 deg. This conveyor belt carries the pit-run material, minus the sizes over 4-in. which are discarded, to the top of the washing bunkers, where it is sprayed with water before it enters the screens. Two De Laval 1,500-g.p.m. centrifugal pumps, driven by 50-hp. Allis-Chalmers motors,

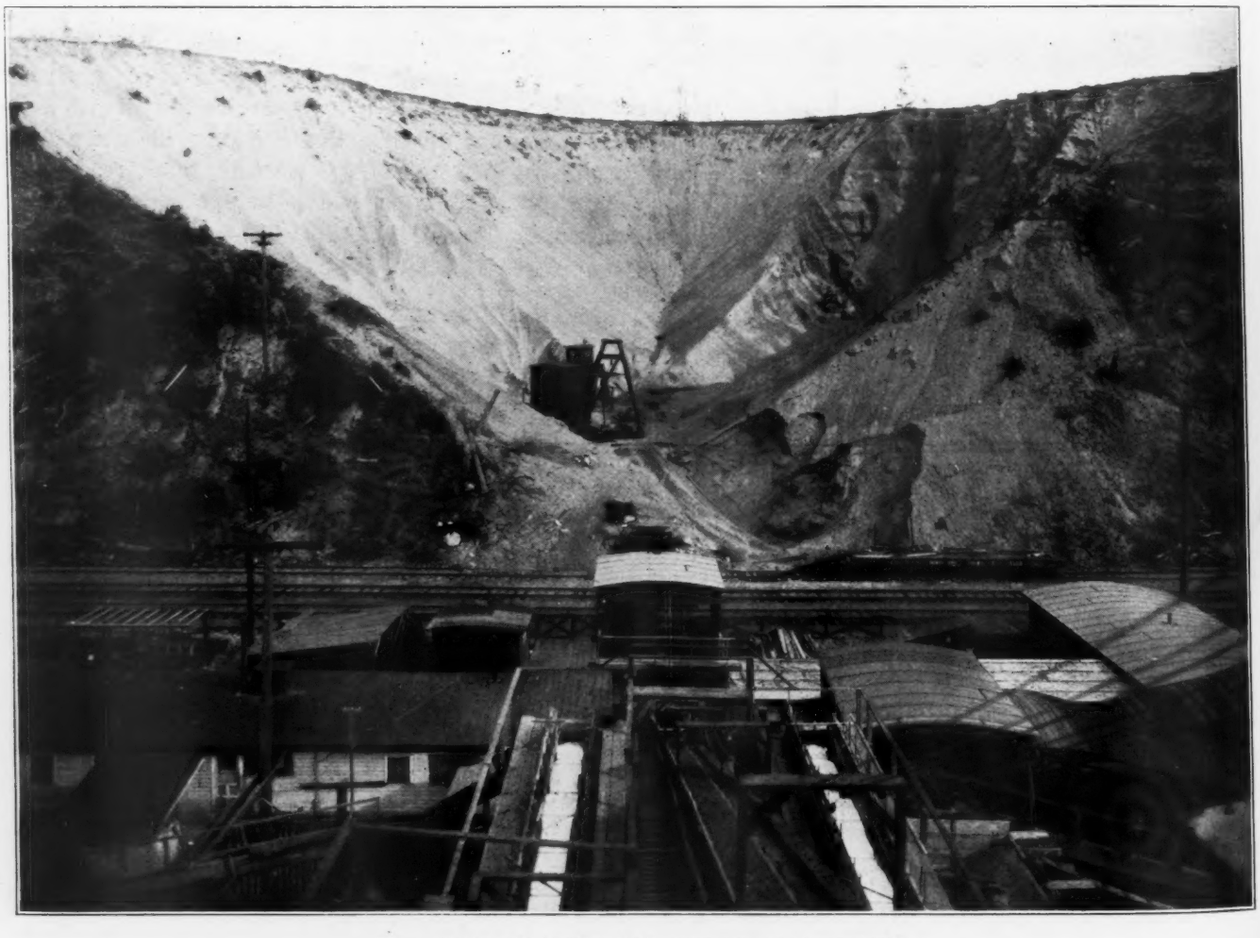
Aerial view. Main operations are within white outline (middle left), other holdings within rectangular outline above. Car-storage yard will occupy space enclosed by line inside the mouth of the creek

Inclined 42-in. belt conveyor to storage system

supply the water which is taken from one of the fresh-water springs located in the tunnel mentioned above.

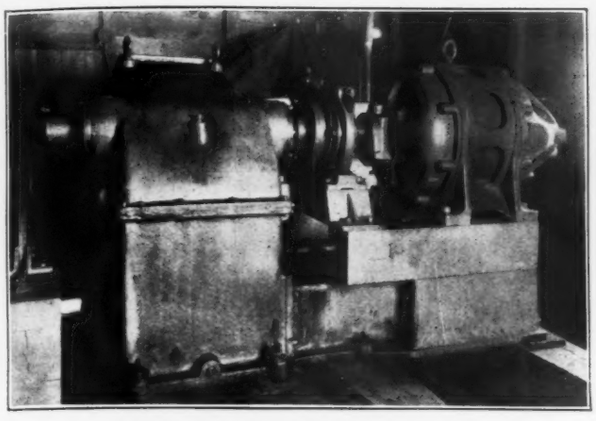
After being sprayed, the material passes through four Stephens-Adamson revolving screens, all driven by one 50-hp. Allis-Chalmers motor, through chain and gear drives. The first is a scalping screen on which all material over 3-in. is retained. The second revolving screen takes out all gravel from 3-in. to 1⅝-in.; the third removes material between 1⅝-in. and 17/32-in. in diameter; while the fourth has 5/16-in. round holes. The undersize from the fourth revolving screen passes through a stationary screen with ¼-in. mesh, set at a 30 deg. angle. The material retained, varying within the close limits of ¼-in. and 5/16-in., is sold as roofing gravel. All five sizes are deposited into the bunkers below each screen, while particles smaller than ¼-in. are flumed, along with the washing water, to tanks where the sand is settled out.

The bunkers have a combined capacity of 3,500 cu. yd. Hoppers beneath each bunker feed onto the 42-in. Goodyear bunker belt running on Webster-Brinkley carrier rolls. This belt conveyor is on 450-ft. centers, runs the entire length of the bunker and is reversible, being arranged to load scows at one end or to send the finished material to storage at the other end by reversing the belt drive. The belt travels 325 ft. per minute and is driven by a 100-hp. Allis-Chalmers reversible electric motor, through a tandem reduction drive made by the Western Gear Works at Seattle. It is capable of handling 1,000 cu. yd. per hour. The scows carry capacity loads of 700 cu. yd. and constitute the chief means of shipment at present.



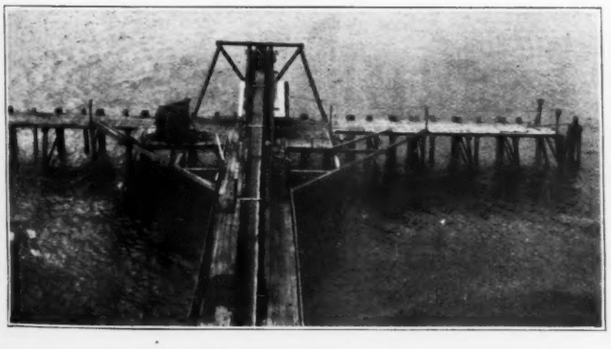
View of the pit, bunker belt conveyor in foreground

By reversing the motor operating the bunker conveyor belt, the entire output may be carried inland, where it is discharged onto an inclined 42-in. 6-ply Goodyear conveyor belt running at right angles on a slope of 18 deg. This belt runs on a Chain Belt carrier system and is driven by a 100-hp. General Electric motor, equipped with an elec-



Motor and reduction drive to large inclined belt to storage

tric solenoid brake-and-dog ratchet for emergency braking in case of power or motor failure. Material is carried 280 ft. on this belt to the top of a trestle above the storage piles. Here it discharges onto a 400-ft. conveying system made up of Chain Belt carriers and a Goodyear 42-in. belt running horizontally along the top of a structural steel and timber framework over storage piles. The belt is driven by a 75-hp. General Electric motor through a 60-in. head pulley with automatic gravity take-up. Running on two steel rails, located on either side



Loading dock as viewed from top of bunker

of the belt is a Link-Belt self-propelled automatic tripper which removes the material from the belt conveyor and deposits it in the proper storage pile below.

Underneath the storage piles and parallel with the overhead structure is a timbered tunnel 15 ft. square in cross-section with double hoppers opening into it from the storage pile every 15 ft. Running the entire length of this tunnel is the largest conveying system in the plant, comprising a 42-in. 6-ply American Rubber Company belt, 600 ft. on

Large dragline bucket in pit headed for conveyor hopper

centers and heavily reinforced. This is carried on Chain Belt Rex self-cleaning ball-bearing (Timken) chilled-iron rolls. The belt is driven by a 150-hp. slip-ring Westinghouse electric motor, driving through a flexible coupling and a 23-to-1 Western Gear Works herringbone reduction drive. A 60-in. lagged head pulley with full-automatic take-up is used. This belt conveys material drawn through hoppers from any section of the storage pile, back onto the reversible bunker belt, permitting continuous production regardless of shipping demands. Thus sand and gravel can be loaded in a far greater volume than the production capacity of the plant.

All belt carrier rolls in the plant are maintained by one man and are greased through Alemite fittings once every 60 days, each roll holding about one pound of grease. Only six men are needed to operate the entire plant and only eight will be needed when the capacity is increased to 1,000 cu. yd. per hour. Flood lights throughout the plant permit night operation. The company maintains its own substation, electric power from the Puget Sound Power and Light Company's lines being brought in at 13,000 volts, and stepped down to 2,300 volts for motors and to lower voltage for other power and lighting requirements.

A complete testing laboratory equipped with Ro-Tap testing sieves by the W. S. Tyler Company of Cleveland, is maintained. The company operates its own machine shop and provides a bunkhouse for workmen. J. T. Heffernan is president and secretary and J. T. Heffernan, Jr., vice-president and general manager.

What is Gneiss?

Gneiss is granite so metamorphosed as to show a banded appearance. It makes a good aggregate.

Twenty-eight Cement Mills Had Perfect Safety Records During 1929

AS THE year 1929 went into history, 28 cement mills operated by members of the Portland Cement Association had worked without a lost-time accident, according to statistics kept by the Association, and were eligible to receive safety trophies. This record is by far the best ever attained in the industry. Last year 17 mills received safety trophies for having gone through the entire year without accident.

A. J. R. Curtis, who has charge of the Associations accident prevention work, with headquarters at Chicago, was delayed with telegrams, which began arriving shortly after the bells and whistles announced the coming of the new year. These telegrams, coming from officials of the winning plants, brought the news of the cement industry's safest year.

The twenty-eight accident-free plants are distributed over the entire country, from the Lehigh Valley on the east to California on the west—and from Irwin, Wash., on the north to Houston, Texas, on the south, dispelling the argument that "regional" hazards due to climatic conditions, labor or process have anything to do with safety.

Three of the plants on the "trophy club list" have now completed three consecutive years without a lost-time mishap. They are the Ironton, O., plant of the Alpha Portland Cement Co.; the Cowell, Calif., plant of the Cowell Portland Cement Co., and the Iola, Kansas, plant of the Lehigh Portland Cement Co. Six other mills which had no accidents in 1929 completed two full years without loss of workmen's time. They are the Mannheim, W. Va., and Bellevue, Mich., mills of the Alpha Portland Cement Co.; the Mildred, Kansas, plant of Consolidated Cement Corp.; the Cape Girardeau, Mo., mill of the Marquette Cement Mfg. Co.; the Dallas, Texas, plant of Trnity Portland Cement Co.; and Ormrod, Pa., No. 3 plant of the Lehigh Portland Cement Co.

The plants of the Lehigh Portland Cement Co. have been highly successful in reducing, the mill at Mitchell, Ind., having been the only one to win a trophy in 1924. Each year since, except in 1925, one or more of the Lehigh units has been on the safety honor roll. Last year five of its plants won the award and four had perfect records during 1929, the fifth plant having lost out the last week in December.

A list of the plants having no lost time accidents in 1929, together with their superintendents, follows:

Allentown Portland Cement Co., Evansville, Pa.; D. C. Morgan.

Alpha Portland Cement Co., Manheim, W. Va.; W. L. Matthes.

Alpha Portland Cement Co., Bellevue, Mich.; G. A. Lawniczak.

Alpha Portland Cement Co., Ironton, Ohio; F. C. Brownstead.

Bessemer Cement Corp., Bessemer, Pa.; D. C. McKee.

Cowell Portland Cement Co., Cowell, Calif.; E. D. Barnett.

Consolidated Cement Corp., Mildred, Kansas; R. M. Johnson.

Great Lakes Portland Cement Co., Buffalo, N. Y.; A. T. Bevier.

Hercules Cement Corp., Nazareth, Pa.; J. Stanley Downs.

International Portland Cement Company, Ltd., Irvin, Wash.; J. H. Neill.

Lehigh Portland Cement Co., Iola, Kansas; C. A. Swiggett.

Lehigh Portland Cement Co., Birmingham, Ala.; R. H. MacFetridge.

Lehigh Portland Cement Co., Ormrod, Pa., Plants No. 2 and No. 3; Wm. J. Montz.

Lone Star Cement Co., Ala., Birmingham, Ala.; W. M. Cabaniss.

Lone Star Cement Co., Ala., Spocari, Ala.; W. W. Deadman.

Lone Star Cement Co., La., New Orleans, La.; J. J. Oakes.

Lone Star Cement Co., Pa., Nazareth, Pa.; E. C. Champion.

Lone Star Cement Co., Va., Norfolk, Va.; G. F. Martinez.

Marquette Cement Mfg. Co., Cape Girardeau, Mo.; R. C. Matthews.

Medusa Portland Cement Co., Toledo, Ohio; W. J. Worthy.

Medusa Portland Cement Co., York, Pa.; R. J. Landis.

Pacific Portland Cement Co., Redwood City, Calif.; M. J. Johnsson.

Southwestern Portland Cement Co., Victorville, Calif.; L. V. Robinson.

Trinity Portland Cement Co., Dallas, Texas; O. V. Bartholomew.

Trinity Portland Cement Co., Houston, Texas; R. G. Sutherland.

Universal Portland Cement Co., Duluth, Minn.; Ray S. Huey.

Wabash Portland Cement Co., Osborn, Ohio; L. E. Palmer.

The cement industry as a whole also experienced a most remarkable year in accident prevention. There was a constant reduction in ordinary accidents, although fatilities have increased despite the vigilant efforts of safety workers. According to statistics compiled by the Portland Cement Association from reports received from 153 mills, only 776 lost time accidents were recorded from January 1 to December 1 of last year, as compared with 865 for the first eleven months of 1928. This is the lowest number ever recorded, although the largest number of plants ever enrolled are reporting.

There were 37 deaths by accident during the first eleven months of the year, as against 31 for the similar period of 1928. September proved the safest month of the year, the records show, only one fatality having occurred, while the previous month—August—was the worst with 9 fatal accidents.

MEN OF THE INDUSTRY

The portrait printed on this page in each number of PIT AND QUARRY is selected without significance as to current events or the position of the individual in the industry.

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A. C. Tagge

President, Canada Cement Company,
Montreal, Quebec

Operators Discuss Business Prospects for 1930 in Letters to Pit and Quarry

Confidence in Country's Continued Prosperity Pervades Appended Forecasts

EXPRESSING confidence in the Hoover prosperity program and forecasting that conditions for 1930 will be about as good as, if not better than, they have been in the past year seems to be the keynote of letters from operators throughout the country to PIT AND QUARRY.

The recent stock market crash will have little, if any, effect on construction activity, as a digest of these letters reveals. Many are of the opinion that the easier money which has followed is bound to boom building by diverting investors' funds from stocks to construction securities. Several of the writers are optimistic over the enlarged highway construction programs planned next year.

Excerpts from some of the communications were printed in last issue. Additional ones are appended below.

Says 1930 Will Be Improvement Over 1929 Conditions

Forecasting the sand and gravel business is about as precarious an occupation as that faced by the weather man. However, at this writing, 1930 looks like a real improvement over 1929, so far as producing and marketing sand and gravel in this territory is concerned. Hard roads and other work of a public nature should be considerably greater in volume, and private work, especially in the smaller and rural communities, should reflect the improving conditions in agriculture. Furthermore, each year brings to members of our industry some valuable experience in operating and sales problems, which makes for more efficient production and a more business-like average in net returns.

Our industry is still comparatively young—and growing pains have racked us fore and aft—but each year we make substantial progress in stabilizing business conditions and meeting the increased demands for accurately prepared products.

THE LINCOLN SAND & GRAVEL CO.,
Lincoln, Ill. V. O. Johnston, *President.*

Consumption in 1930 Should Exceed That During 1929

We believe that consumption in southern Illinois during the year 1930 will exceed consumption during 1929. Due to lack of funds, the state did very little paving during 1929, but receipts from the gas tax during the latter part of this year, together with receipts for 1930, will, no doubt, insure a sum for expenditure in 1930 that will possibly equal past years. Under the present plan, whereby a portion of this sum is rebated to the counties for secondary road construction, we feel that it is going to make each county a little more "highway-conscious," which should result in a greater stimulation in the consumption of road materials.

Budgets in 1930 for railroads and other public utilities equal, and in most cases exceed, those of 1929 so far as we can learn. President Hoover's plea, we have no doubt, will stimulate expenditures for public improvement. We feel also that the easier tone of the money market will have its effect in stimulating private enterprise in the building line as soon as thorough adjustment is made to this market reaction.

Since, in our opinion, prices have been thoroughly well stabilized, we do not look for an upward trend; but there is a tendency to keener competition, as it is clearly apparent that the potential capacity of the producers far exceeds the demand for their product.

We do not believe wages will be decreased. They seem to be thoroughly well stabilized in the industry at present. We do believe that an increase in wages does increase the public's buying power and widen the market for products; but that wage increases are wise only where feasible and justified.

On the whole, the spirit of co-operation between competitors in this territory is good.

Closer attention is being paid to production methods everywhere, due to the desire to effect economies, as well as the desire to meet the insistent demand for better preparation and gradation.

COLUMBIA QUARRY CO.,
St. Louis, Mo. E. J. Krause, *President.*

Latter Half of 1930 to Bring Better Plaster Demand

So far as the demand for plaster is concerned we think it will be six or eight months before conditions are noticeably better. We look for a rather small demand during the first half of the coming year, and then a gradual improvement during the second half. While money is now more readily available for construction purposes it will take considerable time before the financing, planning and construction of new buildings can start, and it will then be several months later before they get down to the point where plaster is required.

Prices in the gypsum industry are now fairly well stabilized to the point that would afford a fair return to manufacturers if the volume of business held up. Prices and wages would be satisfactory on their present level, and a reasonable earning could be made on them, if a larger tonnage of material were moving into consumption. The maintenance of both factors depends of course on the length of time that the present condition of restricted shipments obtains.

We expect 1930 to be as good as 1929, but think it will be the latter part of the year rather than the first part, that will be responsible for it.

THE BEST BROS. KEENE'S CEMENT CO.
John C. Best, *President.*
Medicine Lodge, Kans.

High Railroad Rates Keep Margin of Profit Low

We do not expect that the 1930 demand for our product will exceed the demand of 1929. In our opinion, the trend of prices on sand and gravel is downward. This, in our opinion, is natural, as the method of producing material is becoming more efficient and consequently, the consumer reaps a portion of the benefit. Wages will remain stationary. It has been our policy to pay good wages and we hope to be in position financially to continue to do so. The profits of our business have not been satisfactory, but this is due entirely to water-borne competition and high freight rates.

Production is far ahead of the demand. Market conditions generally are not satisfactory, due to the fact that water-borne material competes in our largest market with material shipped by rail and there is no co-operation between the two. The railroad rates are excessive and this gives the water-borne material a de-

cided advantage. We have had no ill effects in our business due to the conditions of the stock market, except that collections seem to be adversely affected. It is a little too early, however, to tell exactly. Conditions were not any too good before the market crash came.

WARD SAND & GRAVEL CO.
Oxford, Mich. F. L. Ward, *President.*

Davenport Producer Thinks Mergers Are Beneficial

We are of the opinion that the year of 1930 will show some increase for the demand of our products. Iowa expects to continue its paving program and, in addition, indications are that on account of the secondary road law going into effect, more surfacing will be done than has been done during the season of 1929.

We are of the opinion that the prices should be about the same as they have been during the 1929 season. We do not expect any change in the wage situation, but if better prices could be secured, it is our opinion that wages of employees might well be a little higher in proportion to the increase of the prices of materials. But with present prices it is not possible to increase the wages, taking into consideration the short season in our territory for the consumption of coarse aggregate.

Profits have not been satisfactory, which, in our opinion, is mainly due to competition. In the coarse aggregate industry it is not possible to produce very far in advance of demand on account of the bulky material piling up too fast, so when the season ends and after a limited amount has been stored, plants must shut down. In our opinion it would be well to combine plants in the coarse aggregate industry and operate any or all of the plants where it would be advisable to do so, taking into consideration the cost of production as compared to freight rates to points of destination. Freights are very high on coarse aggregate in comparison to the selling price of such material.

We have observed no ill effects from the stock market decline and find our collections are coming in as satisfactorily as they have done before the decline. Past due accounts are falling on account of volume of business decreasing.

LINWOOD CEMENT CO.,
J. F. Schroeder, *Sec.-Treas.*
Davenport, Ia.

California Sand Producer Sees Rosy Year Ahead

We expect the demands for our product in 1930 to exceed 1929 by at least 50 per cent, predicated on the new uses found for our material in a variety of industries coming into this territory. The price trend for 1930 will be stable as far as we are concerned, and the wage scale established by us is a permanent fixture, so there will be no reductions. Profits are satisfactory and relatively secure. We have no competitive hazard that affects our situation. Our production is not equal to the demand at this time, but by midyear of 1930 our expansions will be about sufficient to keep up with the demand. Due to our manufacturing process we try to keep orders in continuity with production. There is an apparent trend towards consolidation by a number of small producers whose operating burdens are excessive, but in our particular field there are but few producers of our type of material on the Pacific slope.

We do notice some ill effects from the recent stock market debacle, but that action is so unsound and affects such a small number of people, that we are not at all disturbed. We have a growing country, a legitimate demand for our product, and management and wage earners with ability and a willingness to work. Money for 1930 ought to be plentiful and cheaper. Therefore, those who dealt in paper profits with merely a theoretical loss will probably have to go to work, whereas the industrial fabric, always operating on sound economical lines, will continue its process of business, which, after all, is a stabilizing factor of growth.

We are always taking advantage of economic production methods and are always in laboratory research, both physical and chemical. We are a new industry in the development of the Pacific Southwest and we feel more or less satisfied with our situation, because we can foresee a very large growth in the future.

THE CRYSTAL SILICA CO.,
J. A. Benell, *President.*
Los Angeles, Cal.

Prices Have Reached Bottom

It seems to us it would be most unusual if the caution now apparent generally in the business world should not be reflected in our industry, at least during the first half of 1930. Qualified students of the situation, however, are pretty well agreed that by the middle of the year general conditions should improve, and we see nothing to prevent whatever improvements occur from touching the sand and gravel industry.

We believe prices generally have reached a basis below which they cannot go with safety, but hold to the opinion that producers, who use ordinary business intelligence in the operation of their own affairs and do not worry too much about putting the other fellow out of business, will be able to justify continuing operation on the present price basis.

MEROM GRAVEL CO.
Indianapolis, Ind. Ben Stone.

Despite Overproduction, Producers Are Increasing Their Facilities

Business for the year 1929 was not as good as in 1928; production was about 10 per cent less, and the selling price from 10 to 12 per cent less. We expect the 1930 demand to compare favorably with that of 1929. We see a tendency for a further slight reduction in the selling price, due to overproduction. There certainly was no justification for the reduction in price last year except to meet competition.

The labor situation for 1929 was very satisfactory. The same rates prevailed and the employees were satisfactory and efficient. We believe that it will be possible to secure labor for 1930 at a slightly lower scale than that paid in 1929. We do not, however, contemplate a reduction in the rates.

We believe that the plants already in existence in this territory can produce almost twice as much material as the market will take. In spite of this, some producers are increasing their capacities, and there have been several small new plants erected. The only way to correct this, in our opinion, is by combination of the various producers to operate only such plants as are necessary to take care of the demand.

NORTH JERSEY QUARRY CO.
Morristown, N. J. I. W. Wortman, *Pres.*

Quality vs. Inferiority Is Limiting Plant Refinement

We expect about the same demand for sand and gravel for 1930 as in 1929. The average price trend may be slightly downward, although already low prices cannot go any lower. Wages are not too high and should not be lowered. In general, we believe profits are both unsatisfactory and insecure. Production is still ahead of demand, although there is a growing tendency toward restriction. The stock market break has not affected our business nor the confidence of our customers.

There is some progress in the refinement of production methods, but this progress is naturally limited due to the fact that quality materials to a large extent are forced to sell on the same basis as inferior products from small obsolete plants.

SAND AND GRAVEL PRODUCER.
Philadelphia, Pa.

Expects Hoover Program to Start Building Boom

We are going into 1930 with the best prospects that we have ever had in the history of our business. We have enlarged our plant to take care of the increased volume. We also believe that the Hoover program is going to increase the amount of construction activity over the country and naturally it will be reflected in our business.

ANTHONY CO., INC.,
Streator, Ill. R. R. Howard,
Vice-Pres.

Stone Company Anticipating Normal Demand Next Year

We do not expect the 1930 demand for stone to exceed that of 1929, since there is no indication of increased funds for public expenditure, even in view of the attempt to increase sentiment for additional construction. Railroad development depends entirely upon the state of their revenue at the time expenditure is made. It is too early to forecast this possibility, although the outlook is less, as indications are that revenue will not be improved over the last half of the season of 1929.

Improvement in preparation and more exacting demand on the part of engineers have had the effect of increasing the demand for well equipped plants in the normal markets. The price trend will be downward. Wages are not too high for profitable operation.

Competition, wages and prices have brought about radical changes in management, lessened expenditures for development, a reduction in overhead, and increased discipline, efficiency, etc. Production is far ahead of demand and getting worse. Larger producers with less cost of production, unit per ton of overhead, geographical location of plants, more highly developed organizations, are serving the public more efficiently than those plants with smaller capacity and operating upon an individual basis. The salvation for the smaller units has been, and will be, to associate themselves with larger ones. Customers who purchase aggregates of all kinds will benefit through the fact that there will be no slackening in the expenditure of public funds.

Collections are not improving. Over-expansion in the construction field has caused extremely keen competition, lessening financial reserves available. More care is required than ever before to assure protection of payment of accounts.

Toledo, O. THE FRANCE STONE CO.
H. E. Bair.

Urges Patience During Economic Reconstruction

Our business activities, devoted to the production and sale of building materials and to manufacturing material handling equipment, have not, as a whole, been entirely satisfactory in 1929. The diminished buying power of farmers and its reaction on agricultural communities, although improved, was still apparent. In the larger cities, the reluctance of investors to purchase construction securities, together with somewhat of an oversupply of certain projects, was felt, and as a consequence, overproduction and very unsatisfactory competitive conditions resulted.

The agricultural situation is, without question, gradually improving. Construction demand is beginning to catch up with supply, and the lessened popularity of stocks as an investment for the average citizen is reflected in the funds again available for improvements and extensions. A tremendous stimulus has been added through recent governmental activities, and with a business situation fundamentally sound as evidenced by large existing corporate surpluses, the latter half of 1930, in spite of the period of deflation through which we have passed, should be distinctly better than the same period this year.

Patience while economic readjustment is under way, together with a conservative attitude toward production, will undoubtedly be rewarded by a return to normal conditions during the next twelve months.

H. D. CONKEY & CO.,
Chicago, Ill. H. D. Conkey.

Asphalt Head Looks for Good Business in 1930

The outlook for the paving industry for 1930, in our opinion, is good. Most State Highway Departments will have as much money from regular sources of income, and many of the States have bond issues that will enlarge their construction program for the year.

At the present time there is a tendency to increase all municipal, county, and state work for the purpose of employing surplus labor. All of these conditions will undoubtedly contribute to an increased demand for a good paving material—such as Kyrock.

KENTUCKY ROCK ASPHALT CO.,
Louisville, Ky. W. H. Tarvin,
President.

Looks for More Activity

We have just passed through the worst year since we have been in the sand and gravel business. Construction in this particular part of the state has been at a stand-still for the past twelve months and we certainly look forward to 1930 being a better year than this one has been.

We were disappointed last year in not getting some kind of a road program in our state, but we believe that we will get this during 1930, which should improve the sand and gravel business considerably for us.

By the spring of 1930, the gravel business in this territory should be fairly active.

WESTON SAND & GRAVEL CO.,
Logtown, Miss. Harold B. Weston,
Sales Manager.

Lime Operator Has Hopes for Better Prices

There seems to be a general feeling that the lime business should take an upward turn during the coming year. We are going on the theory that the Hoover plan for better business in 1930 is sound in principle and ought to have a salutary effect on every line of business. We do not plan any increased production but are planning economies which will lower the cost of production so we can meet present prices.

It seems to me that the Federal Trade Commission should continue to analyze the lime situation to the end that better prices might prevail. Companies having a good product could then continue in business on a profitable basis.

I look for good building operations in the Middle West this coming year and for that reason believe the lime industry should have an outlet for their production in sufficient quantities.

QUAD CITY BRICK AND LIME CO.
Davenport, Ia. A. J. Fauber,
Treasurer.

Looks for Building Boom

The recent calamity in the stock market is, in our opinion, going to have a very decided effect upon building activities. Call money has produced big interest, naturally tempting surplus funds in that direction and the advance in stocks has kept additional funds in that channel.

The reaction of 1930 is going to make it easier to sell bonds which, during the last few months, have been too conservative for most investors. With an easier market for such securities, the building industry is certain to go ahead, we believe, from 30 to 50 per cent greater than during the last year. While this may not be true in large buildings, it will be true in homes and even speculative buildings are sure to come in for a good share.

LANNON QUARRIES CORP.,
Beaver Dam, Wis.
C. A. Starkweather.

Kieselguhr Industry Needs Better Machinery

The demand for 1930 is already 25 per cent over that of 1929, and the variety of meshes and the percentage of meshes wanted from us is greater, particularly the fine and sand-proofed meshes. This, as I view it, is due to the fact that manufacturers have heretofore looked on kieselguhr as a side issue and not as a product of merit. They are just finding out its real value and the point of interest to them is the fact that in many industries it takes the place of more expensive items, resulting in lower production costs, both in supplies and labor.

The prices in coarse meshes will remain as they are; finer meshes will advance in some industries on account of the fact that the demand is greater than the supply right now.

Our miners work on a contract basis and make excellent wages. Our mill men were advanced in 1929. Doubtless increased wages increase the buying power of labor; however, our men all make good money compared to those in surrounding industries and are well satisfied. Our wages are not too high for profitable operation, the production cost per ton allowing about the same margin of profit as formerly.

Our demand is ahead of production, the trouble being that we cannot secure equipment of special design to increase production as demanded. We have a list of customers who have taken our entire output for some time and hope to retain them. So far as our business went, we knew nothing of the recent stock-market *debacle*, except what we read in the papers. Our collections and accounts are O. K.

The kieselguhr industry has spent hundreds of thousands of dollars trying to perfect a large and efficient dryer, and some class of air separation and sand-proofing devices that will produce tonnage at reasonable costs for power, but, to my knowledge, it has not been done yet. What is still worse, the industry has no one of experience or no company with equipment to whom to turn. If this could be done, the problems of the business would be solved and the industry put on a large tonnage basis. Many, many excellent commercial beds are lying idle on this account. We are ourselves spending money and time on these matters right now.

TRI-O-LITE PRODUCTS CO.
Carlin, Nev. C. T. Hurd, *Gen. Mgr.*

Pacific Coast Prospects Excellent for 1930

The rock, sand and gravel industry in this part of the United States has nothing to worry about business in 1930. While no boom year such as 1923 is expected to materialize—nor is it wanted—the industry as a whole can look forward with confidence to a year of above-the-average business on a price basis which will return a legitimate profit on the huge capital sums invested.

President Hoover's marshalling of the forces of capital, of government departments and their undertakings, and of the national range of private and public enterprise, spells prosperity for 1930 in capital letters.

Billions of dollars—the greatest single year's expenditure in all history—are to be poured into the channels of production next year by the leading national industries. Other billions are to be set rolling by the federal, state and municipal governments in all kinds of public works, and of these billions the major part will come to rest in the pockets of this country's 120,000,000 citizens. Everyone will benefit, a fact which should be borne well in mind by the "croakers" who like to believe that the lion's share of public expenditures finds its way into the pockets of the few.

On the Pacific Coast, especially California, optimism prevails regarding the outlook for home and office construction next year and a heavy program for road building and improvement of existing highways. Home construction was carried on this year at a very conservative rate with the result that, in Los Angeles, the city's estimated annual population increase of over 100,000 people calls for more and better construction next year than this. In office-building construction many factors have intervened to prevent the erection of a number of scheduled projects involving millions of dollars—factors such as the cutting through of new traffic arteries, the complete formulation of civic-center plans, and the solution of the present height-limit problem. Most of these stumbling blocks to progress are scheduled for elimination early in 1930 and, if they are, the result will be a recrudescence of building activity such as the city has not seen since 1923.

All indications are that our volume in 1930 should be at least 25 per cent greater than in 1929.

CONSOLIDATED ROCK PRODUCTS CO.
Los Angeles, Cal. George A. Rogers, *Pres.*

Anticipates Prosperous Year

We expect the year 1930 to be a very prosperous and busy year for us. From the present outlook there appears to be every reason to feel that 1930 should surpass 1929, which was much better than the year preceding.

LEONARD GRAVEL CO.
Lansing, Mich. M. E. Sheltraw, *Sec.-Treas.*

Portland Cement Statistics For November

According to statistics released by the Bureau of Mines of the Department of Commerce, American portland cement mills continue to show a decline in the ratio of operations to capacity for the 12 months' period ended November 30. The ratio of operations to capacity for last twelve months was 66.8 per cent, this rate having fallen from a maximum of 71.1 per cent for twelve months ending April 30, to 66.8 per cent for 12 months' period ended November 30.

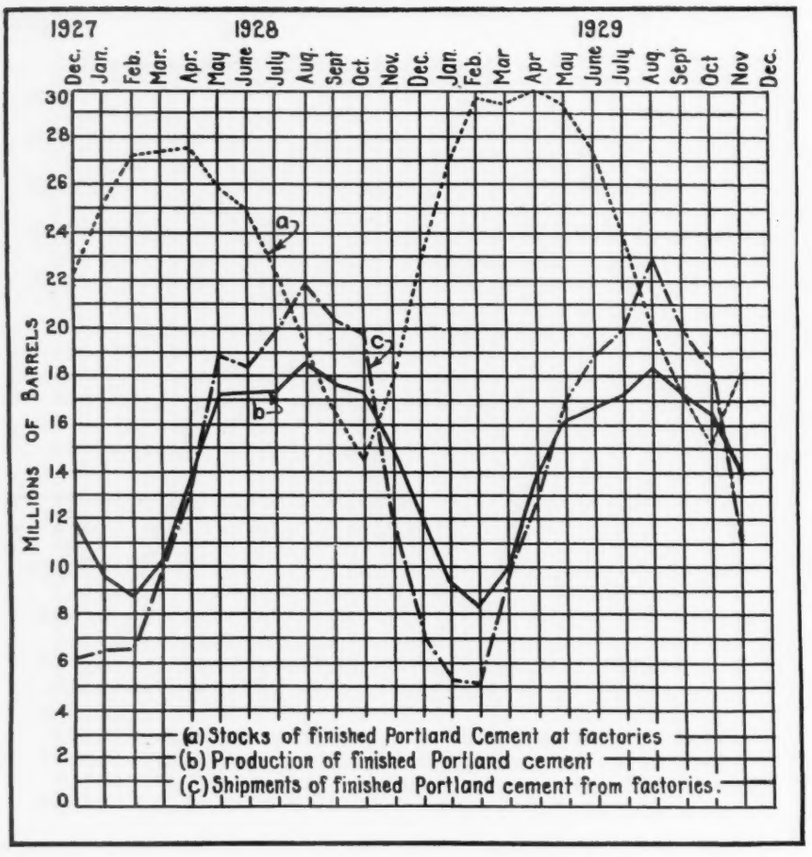
During the month 14,036,000 barrels were produced, 11,205,000 barrels were shipped, and stocks on hand at the end of the month were 18,213,000 barrels. Production for November, 1929, was 6.8 per cent less, and shipments 6.2 per cent less than November, 1928. Stocks at the mills were 2.5 per cent higher than a year ago.

Western Ceramics to Build Plant at Aberdeen, Wash.

The Western Ceramics Mining & Manufacturing Co. of Spokane, Wash., will begin construction some time this month of a plant at Aberdeen, Wash., for refining clay, silica and feldspar, obtained from deposits owned by the company at Moscow, Idaho, and Deer Park, Wash. W. J. Harper is to be superintendent.

Award Contract for Cement Silos and Packing House

The Huron Portland Cement Co., of Detroit has awarded a $500,000 contract to the Burrell Engineering and Construction Co., of Chicago, for the erection of six cement silos and a packing house at Toledo, O. Cement will be brought to Toledo by lake freighters in bulk at the rate of about 5,000 bbl. daily and will be unloaded into the silos, later to be drawn off into the packing house to be sacked. Construction is to start shortly.


1927
1928
1929
Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept Oct. Nov. Dec. Jan. Feb. Mar Apr May June July Aug. Sept Oct Nov Dec.
MILLIONS OF BARRELS
30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0
a
b
c
(a) Stocks of finished Portland Cement at factories
(b) Production of finished Portland cement
(c) Shipments of finished Portland cement from factories.

Portland Cement in November, 1929

Relation of Production to Capacity

	November		October	September	August
	1928	1929	1929	1929	1926
	Pct.	Pct.	Pct.	Pct.	Pct.
The month	77.4	66.6	77.0	81.8	86.1
12 months ended	74.1	66.8	67.3	67.5	68.2

Production, Shipments and Stocks of Finished Portland Cement, by Districts, in November, 1928 and 1929, and Stocks in October, 1929, in Thousands of Barrels

	November						Stocks
	Production		Shipments		Stocks at end of month		at end of Oct.,
District	1928	1929	1928	1929	1928	1929	1929*
Eastern Penn., N. J., and Md	3,338	2,956	3,153	2,932	4,251	4,024	4,000
New York and Maine	962	848	725	738	1,339	1,107	996
Ohio, Western Penn., W. Va	1,587	1,537	1,133	1,197	2,439	2,580	2,240
Michigan	1,409	1,228	811	667	1,355	1,636	1,075
Wis., Ill., Ind., and Ky	1,973	1,760	1,272	1,219	1,629	1,869	1,329
Va., Tenn., Ala., Ga., Fla., La	1,413	1,085	1,350	1,025	1,683	1,557	1,498
Eastern Mo., Ia., Minn., S. D	1,283	1,344	777	742	1,972	1,876	1,273
West. Mo., Neb., Kan., Okla., and Ark.†	884	1,176	726	788	1,150	1,009	621
Texas	529	661	451	523	424	665	527
Colo., Mont., Utah, Wyo.,† and Idaho†	238	120	145	119	398	453	451
California	1,173	1,091	1,103	1,038	757	989	937
Oregon and Washington	279	230	305	217	372	448	434
	15,068	14,036	11,951	11,205	17,769	18,213	15,381

Production, Shipments and Stocks of Finished Portland Cement, by Months, in 1928 and 1929, in Thousands of Barrels

Month	Production		Shipments		Stocks at end month	
	1928	1929	1928	1929	1928	1929
January	9,768	9,881	6,541	5,707	25,116	26,797
February	8,797	8,522	6,563	5,448	27,349	29,870
March	10,223	9,969	10,135	10,113	27,445	29,724
April	13,468	13,750	13,307	13,325	27,627	30,151
May	17,308	16,151	18,986	16,706	25,984	29,624
June	17,497	16,803	18,421	18,949	25,029	27,457
July	17,474	17,281	19,901	20,295	22,580	24,525
August	18,759	18,585	21,970	23,052	19,374	20,056
September	17,884	17,223	20,460	19,950	16,799	17,325
October	17,533	16,731	19,836	18,695	14,579	*15,381
November	15,068	14,036	11,951	11,205	17,769	18,213
December	12,189	.....	7,384	.....	22,918	.....
	175,968	.....	175,455	.....	.....	.....

Cement Statistics For November, 1929

The portland cement industry in November, 1929, produced 14,036,000 barrels shipped, 11,205,000 barrels from the mills, and had in stock at the end of the month 18,213,000 barrels, according to the United States Bureau of Mines, Department of Commerce. The production of portland cement in November, 1929, showed a decrease of 6.8 per cent and shipments a decrease of 6.2 per cent as compared with November, 1928. Portland cement stocks at the mills were 2.5 per cent higher than a year ago.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 165 plants at the close of November, 1929, and of 159 plants at the close of November, 1928. In addition to the capacity of the new plants which began operating during the twelve months ended November 30, 1929, the estimates include increased capacity due to extensions and improvements at several old plants during the period.

Exports and Imports

(Compiled from the records of the Bureau of Foreign and Domestic Commerce and subject to revision)

Domestic Hydraulic Cement Shipped to Alaska, Hawaii and Porto Rico, in October, 1929

	Barrels	Value
Alaska	859	$ 2,581
Hawaii	23,346	57,396
Porto Rico	5,931	12,387
	30,136	$72,364

Imports of Hydraulic Cement by Countries and by Districts, in October, 1929

Imports from	District into which imported	Barrels	Value
Belgium	Los Angeles	89,054	$52,572
	Massachusetts	5,646	6,410
	New York	97	202
	Porto Rico	15,203	23,616
	Total	110,000	$82,800
Canada	Alaska	40	$182
	Duluth-Superior	9	23
	Maine and N. H.	131	146
	Vermont	6	15
	Total	186	$366
Denmark	Los Angeles	100	$ 255
	Maryland	3,489	7,000
	Porto Rico	22,800	33,771
	Total	26,389	$41,026
France	Massachusetts	1,000	$1,216
	New York	1,492	3,033
	Total	2,492	$4,249
Germany	Los Angeles	2,250	$4,226
	San Francisco	250	532
	Total	2,500	$4,758
United Kingdom	New Orleans	501	$ 760
	New York	30,498	53,545
	Total	30,999	$54,305
	Grand Total	172,566	$187,50•

Exports of Hydraulic Cement by Countries in October, 1929

Exported to—	Barrels	Value
Canada	5,318	$23,215
Central America	17,018	39,146
Cuba	6,301	16,548
Other West Indies and Bermuda	6,295	13,728
Mexico	28,259	187,860
South America	33,424	28,939
Other countries	4,744	28,403
	101,359	$337,839

National Equipment Becomes Operating Organization

The National Equipment Corporation, a consolidation of the Koehring and T. L. Smith Companies of Milwaukee; the Insley Manufacturing company of Indianapolis; The Parsons Company of Newton, Ia.; and the Kwik-Mix Concrete Mixer Company of Port Washington, Wis., becomes an operating company on January 1, 1930.

Philip A. Koehring is president and general manager of the National Equipment Corporation, with headquarters at 31st St. and Concordia Ave., Milwaukee.

Sales, service, advertising and accounting departments have been centralized thereby rendering a more efficient service, as well as effecting economies in operation and overhead.

R. E. Brooks, for a number of years engaged in the equipment business in New York, was recently elected vice-president and will be in charge of sales.

Announcement of these changes in policy will be made to the sales organization at the time of the Road Show, in Atlantic City, where the company will exhibit a new machine in the contractors' euipment field, as well as several new models of present equipment.

Other officers of the National Equipment Corporation are as follows:

W. H. Insley, vice-president; H. E. Smith, vice-president; H. C. McCardell, vice-president; W. J. Koehring, vice-president; W. J. Zimmers, secretary; G. E. Long, comptroller; C. A. Koehring, assistant treasurer.

Canada Gypsum to Build New Plant at Calgary

Canada Gypsum & Alabastine, Ltd., is soon to start construction of a new plant at East Calgary, Alberta, on an 8-acre site recently purchased, according to an announcement by W. E. Armstrong, western manager of the concern. The company now has gypsum mills operating at Caledonia and Lythmore, in Ontario; Montreal, Que., Winnipeg, Man., Pt. Mann, B. C. Lime are located at Paris, Elora and Teeswater, in Ontario.

Distribution of Cement

The following figures show shipments from portland cement mills distributed among the states to which cement was shipped during September and October, 1928 and 1929.

Portland Cement Shipped from Mills into States in September and October, 1928 and 1929, in Barrels*

Shipped to—	1928—Sept.—	1929	1928—Oct.—	1929
Alabama	255,120	179,011	226,835	172,980
Alaska	277	282	132	662
Arizona	56,940	56,000	60,063	52,544
Arkansas	136,794	206,476	126,798	190,656
California	1,020,406	915,829	1,145,337	1,075,308
Colorado	140,150	91,602	114,600	97,352
Connecticut	233,257	206,737	259,374	229,221
Delaware	34,578	34,281	73,582	36,005
District of Columbia	81,703	107,654	133,450	104,051
Georgia	155,421	117,262	180,537	124,215
Florida	98,859	88,730	142,911	106,271
Hawaii	21,378	24,896	34,436	22,716
Idaho	30,886	27,375	28,253	28,709
Illinois	2,553,958	1,721,624	2,127,381	1,406,895
Indiana	847,440	909,295	658,331	686,986
Iowa	738,450	968,958	442,740	716,047
Kansas	272,461	332,819	316,943	336,060
Kentucky	211,690	176,115	203,725	178,287
Louisiana	112,202	171,673	106,819	245,643
Maine	79,289	94,201	72,694	80,564
Maryland	227,573	294,089	307,849	291,625
Massachusetts	315,939	356,318	337,880	365,195
Michigan	1,692,432	1,601,684	1,449,956	1,161,054
Minnesota	377,096	430,298	306,698	352,958
Mississippi	129,970	107,651	133,253	99,934
Missouri	554,767	748,870	583,508	681,598
Montana	59,124	77,505	52,977	55,468
Nebraska	159,659	224,168	174,041	213,158
Nevada	13,635	14,180	9,954	15,028
New Hampshire	72,947	75,573	73,003	67,001
New Jersey	884,759	825,204	1,064,536	911,203
New Mexico	27,552	21,621	37,837	28,479
New York	2,398,193	2,237,801	2,445,879	2,295,014
North Carolina	167,910	129,411	238,528	147,399
North Dakota	43,739	49,597	41,390	42,474
Ohio	1,410,196	1,207,197	1,312,086	1,218,439
Oklahoma	361,360	365,927	314,273	376,193
Oregon	132,521	122,669	120,863	114,228
Pennsylvania	1,519,073	1,632,356	1,651,472	1,550,799
Porto Rico	500	4,190	0	5,195
Rhode Island	77,316	81,919	87,953	78,405
South Carolina	108,575	64,446	154,004	88,492
South Dakota	58,274	83,173	52,621	94,859
Tennessee	353,282	358,182	344,413	358,340
Texas	515,419	697,091	564,578	759,309
Utah	49,468	73,952	51,793	60,619
Vermont	108,095	135,894	107,388	109,422
Virginia	173,104	161,521	220,617	152,804
Washington	291,994	305,056	261,412	240,543
West Virginia	166,816	164,543	170,134	168,957
Wisconsin	791,171	759,187	622,618	597,697
Wyoming	27,555	24,015	17,682	28,708
Unspecified	41,593	22,207	11,413	0
	20,392,866	19,888,315	19,777,550	18,621,769
Foreign countries	67,134	61,685	58,450	73,231
Total shipped from cement plants	20,460,000	19,950,000	19,836,000	18,695,000

*Includes estimated distribution of shipments from three plants each month.

Production and Stocks of Clinker, by Months, in 1928 and 1929 in Thousands of Barrels

Month	Production 1928	Production 1929	Stock at end of month 1928	Stock at end of month 1929	Month	Production 1928	Production 1929	Stock at end of month 1928	Stock at end of month 1929
January	11,839	12,041	9,672	9,642	July	15,981	15,180	11,707	11,619
February	11,363	11,255	12,237	12,436	August	16,202	15,822	9,357	8,989
March	12,501	12,450	14,463	14,948	September	15,909	15,147	7,566	6,985
April	13,844	14,166	16,002	15,472	October	15,782	15,520	5,944	*5,915
May	16,025	15,445	14,329	14,911	November	14,930	14,073	5,953	6,105
June	15,940	15,312	12,944	13,586	December	13,426	.....	7,422	.....

*Revised.

†The inclusion of Wyoming begins with April, 1929; of Idaho, with June, 1929; of Arkansas, with September, 1929.

Production and Stocks of Clinker (Unground Cement), by Districts, in November, 1928 and 1929, in Thousands of Barrels

District	Production 1928	Production 1929	Stocks at end of month 1928	Stocks at end of month 1929
Eastern Pennsylvania, New Jersey and Maryland	3,151	2,804	702	876
New York and Maine	1,035	935	724	539
Ohio, Western Pennsylvania and West Virginia	1,568	1,577	528	537
Michigan	1,291	1,255	440	502
Wisconsin, Illinois, Indiana and Kentucky	2,029	1,840	283	442
Virginia, Tennessee, Alabama, Georgia, Florida, Louisiana	1,409	1,066	722	598
Eastern Missouri, Iowa, Minnesota and South Dakota	1,325	1,260	350	430
W. Missouri, Nebraska, Kansas, Oklahoma, Arkansas†	915	1,147	338	166
Texas	540	731	131	372
Colorado, Montana, Utah, Wyoming† and Idaho†	243	119	321	273
California	1,157	1,088	1,143	945
Oregon and Washington	267	251	271	425
	14,930	14,073	5,953	6,105

New Plant Operating

The Sierra Gypsum Products Company, Ltd., Los Angeles, Calif., is bringing into operation a plant for manufacturing an improved plasterboard with a capacity of 100,000 sq. ft. per day. It is also engaged in the production of the Sierra gypsum tile.

PERSONAL MENTION

Austin A. Miller, 3247 Cherry St., Toledo, O., is reported to have purchased 38 acres of stone deposits at Delphos, O., for development of a quarry.

H. W. Munday has been made vice president and sales engineer of the McGann Manufacturing Co. of York, Pa., with offices at 228 N. LaSalle St., Chicago. Mr. Munday has had wide experience in the lime and portland cement industries, and was until recently, general sales manager of Huron Industries, Inc.

Norman M. Stineman, for many years a structural engineer with the Portland Cement Association at Chicago, resigned his position effective December 31, to become editor of *Concrete*, at Chicago. Mr. Stineman succeeds **O. A. Stellar,** who has held the editorship for the past five years. Mr. Stellar, who is also a former Portland Cement Association employee, has gone to Los Angeles to assume the position of advertising manager of McEverlast, Inc., manufacturers of emulsion used in the Hunt process of curing concrete.

Ray M. Hudson, assistant director of the National Bureau of Standards, in charge of Commercial Standardization, resigned, effective December 31, to assume his new duties as secretary of the Massachusetts division of the New England council, with headquarters in Boston, Mass. Mr. Hudson is recognized nationally as an authority on the elimination of industrial waste.

Sol J. V. Godman will build a rock crushing plant in Sunland, Cal. Railroad spur will be built to plant.

John V. N. Dorr, president of the Dorr Company, has been awarded the James Douglas Medal for 1929 for distinguished achievement in non-ferrous metallurgy. The medal is bestowed annually by the A. I. M. E. Dr. Dorr is the originator of many important process methods and developed the classifier and thickener and other apparatus of importance in modern technology. The medal will be formally presented at the annual banquet of the Institute in February.

Geo. H. Turner, 2563 Oxford St., Vancouver, B. C., Can., is interested in development of diatomite deposits at Quesnel, B. C.

Charles Piez

Charles Piez, chairman of the board of the Link-Belt Co., has assumed the presidency of the American Society of Mechanical Engineers, having been honored by the election to that high office at the annual meeting of the Society at New York on December 3.

Dr. H. A. R. Zehrlant, president of Plastic Stone Products Corp., of New York, will depart shortly on a trip to Central and South America to study business conditions in the building trades. Mr. Zehrlant was recently granted a professional engineer's license by the University of the State of New York.

Col. Robert W. Stewart, former chairman of the Standard Oil Co. of Indiana, has been elected to the board of directors of the Indiana Limestone Co. Col. Stewart will take an active part in the further development of the Indiana stone industry.

G. A. Reinhard has been appointed Cleveland, O., representative of the Dings Magnetic Separator Co. of Milwaukee, Wis., effective January 1. Mr. Reinhard has been identified with the electrical industry for more than 20 years and has specialized in the problems and details of magnetic separation. His offices will be located at 1836 Euclid Ave., Cleveland.

G. M. Butler, dean of the college of Mines and Engineering of the University of Arizona, has been appointed chairman of a committee to award the Claussens gold medal of the American Association of Engineers. This medal is to be awarded annually to the United States citizen—engineer or otherwise—who has during the preceding year performed the most distinctive service for the welfare of engineers. The first award is for the year ending Dec. 31, 1929.

E. H. Pearson, New York district manager of Electric Machinery Manufacturing Co., died suddenly on the morning of December 7. Mr. Pearson was born in Sweden, on September 10, 1893. His early life was spent in Sweden, and he received some of his technical education at the Institute of Technology in Malmo. The deceased was a member of the American Society of Refrigeration Engineers, the American Society of Swedish Engineers of Brooklyn, N. Y., and the American Institute of Electrical Engineers.

Thomas Jones, superintendent of the LaGrange, Ill., quarry of Dolese and Shepard Co., dropped dead while shoveling snow in the driveway to his home at LaGrange on December 19. Death was due to apoplexy. Mr. Jones had been in fairly good health and his sudden demise was a shock to his family, friends and business associates. He was a veteran employee of Dolese and Shepard Co. and was 65 years old. Two sons and eight daughters survive. Mr. Jones was a native of Galion, O. The funeral was held Monday afternoon, December 23. Burial was at LaGrange.

Announce Consolidation

Merger of the Robert Berner Structural Steel Co. and Hetherington & Berner, to be known as Hetherington & Berner, Inc., has been announced by Robert Berner, president of the new corporation. General offices and works will be maintained at Indianapolis, Ind.

Pueblo, Colo., Operator Erects Building

A modern, one-story office building has been erected by the Fountain Sand and Gravel Co. of Pueblo, Colo. The building is of modern, fireproof construction and in addition to the general and private offices of the company, includes a spacious storeroom. Fred H. Bullen is president of the Fountain Sand and Gravel Co.

FINANCIAL NEWS
CORPORATE & BUSINESS

The information contained in these financial pages is given with the understanding that any statement on the part of this magazine or any of its staff, as to the responsibility or standing of any person, firm or corporation, or as to the value of any property or securities is a mere expression of opinion, given as a matter of service to the readers of PIT AND QUARRY, *for which no responsibility in any way is to attach to this magazine or to any of its staff.*

Excellent Prospects for a Revival in Cement Industry

Figures lately compiled show that domestic production of cement for the eleven months ended November 30 last totaled 158,932,000 barrels, nearly 5,000,000 barrels less than production in the same period in 1928. Stocks on hand at the end of September were reported to be 2.5 per cent higher than at the same time a year ago. The decrease in production for the current year is the first reversal in the steady expansion of the cement output during the last decade.

Prospects for a revival in the industry, however, are considered bright. About 28 per cent of domestic cement production goes into the manufacture of roads as compared to 26 per cent for public and commercial buildings. On account of the status in the municipal bond market in the last few months large amounts of municipal financing have been held back and considerable quantities of new road construction have been delayed for lack of funds. With conditions in the municipal bond market looking up, it is expected that many of the retarded issues soon will come on the market. This should have a stimulating effect upon the cement industry as a whole.

Efforts of the federal government in Washington, headed by President Hoover, are now being directed to a resumption of activities in a number of other lines, including construction of new buildings, which has shown a decided falling off during the present year. If these efforts are successful, and if building is resumed on a considerable scale within the next few months, the beneficial effects upon the cement industry as a whole should be felt within a short time.

The first step in this direction was taken when President Hoover conferred with the country's building and construction leaders at the White House in regard to conditions prevailing in that industry in the various parts of the country and what position it will be able to assume in his program of maintaining the country's business activity.

The President intimated to the members attending the conference that the government would proceed as rapidly as possible with its construction program and that it would cooperate with the states and counties throughout the country in their road building programs.

T. T. Flagler, president of the Associated General Contractors of Atlanta, stated after the conference that business should be stimulated by the efforts of these conferences.

Mr. Flagler told the President that the building industry could handle double the volume of business it is now handling at more economical prices than heretofore.

In answer to a question from the President, Mr. Flagler said that in general the country was not overbuilt, that in some localities there was a little too much construction, but as a general condition much more building was needed.

Road builders at the conference stated that indications were that a 10 per cent increase over 1929 in national highway construction would be carried out in the year 1930, exclusive of city and county roads. This would amount to $1,100,000,000 and the cities and counties would have a similar program calling for the same amount, making the total $2,200,000,000.

Frank H. Smith, president of the Portland Cement Association, who attended the conference, said it was a preliminary one looking to formation of several organization committees to make further surveys and recommendations to the President. Mr. Smith said the President had pretty definite ideas as to what he wanted to accomplish, which is to stimulate construction generally. This has been held up by inability to sell bonds, but as money rates are falling there should be no difficulty about that.

Mr. Smith stated further that there is no intention on the part of the cement industry to reduce wages. "Our business in 1929 was slightly less than a year ago," he said. All cement mills are running at reduced scales, he said.

CURRENT DIVIDENDS

COMPANY	CLASS OF STOCK	DIVIDEND RATE	HOLDERS OF RECORD	PAYABLE
Atlas Portland Cement	Preferred	$.66⅔ qr.	Dec. 21	Jan. 1
American Aggregates Corp	Preferred	1¾% qr.	Dec. 20	Jan. 1
Boston Sand and Gravel	Preferred	$.87½ qr.	Dec. 22	Jan. 1
Boston Sand and Gravel	Common	$.40 qr.	Dec. 22	Jan. 1
Calaveras Cement Co	7% Pfd.	1¾% qr.	Dec. 30	Jan. 15
Canada Cement	6½% Pfd.	1⅝% qr.	Nov. 30	Dec. 31
Canada Gypsum and Alabastine	New stock	$.37½ qr.	Dec. 14	Jan. 1
Cleveland Builders Supply	Common	$.50 qr.	Dec. 15	Jan. 1
Consolidated Oka Sand and Gravel	Preferred	1¾% qr.	Dec. 27	Jan. 2
Coronet Phosphate Co	.....	$2.00 qr.	Dec. 14	Jan. 1
Dolese and Sheperd	.....	$2.00 qr.	Dec. 20	Jan. 1
Dufferin Pav. and Crushed Stone	7% 1st Pfd.	1¾% qr.	Dec. 16	Jan. 1
Ideal Cement Co	Common	$1.75 qr.	Dec. 13	Jan. 1
Illinois Brick	.....	$.60 qr.	Jan. 1	Jan. 15
International Salt Co	.....	1½% qr.	Dec. 16	Jan. 1
International Cement	Common	$1.00 qr.	Dec. 11	Dec. 28
Johns Manville	Preferred	1¾% qr.	Dec. 12	Jan. 2
Johns Manville	Common	$.75 qr.	Dec. 26	Jan. 16
Kelley Island Lime & Tr	.....	$.62½ qr.	Dec. 20	Jan. 1
Kentucky Rock Asphalt	Common	$.40 qr.	Dec. 15	Jan. 1
Laclede Clay Products	Preferred	1¾% qr.	Dec. 29	Jan. 1
Lawrence Portland Cement	.....	1% qr.	Dec. 14	Dec. 30
Lehigh Portland Cement	Preferred	1¾% qr.	Dec. 14	Jan. 1
Limestone Products	7% Pfd.	1¾% qr.	Dec. 15	Jan. 1
Medusa Portland Cement	Preferred	1½% qr.	Dec. 25	Jan. 1
Medusa Portland Cement	Common	$1.50 qr.	Dec. 25	Jan. 1
Metropolitan Paving Brick	Preferred	1¾% qr.	Dec. 15	Jan. 1
Mineral Products Co	Pfd. "A"	$.20 qr.	Dec. 30	Jan. 1
Peerless Cement	Preferred	$1.75	Dec. 20	Dec. 31
Pennsylvania Salt	Common	$1.25 qr.	Dec. 30	Jan. 15
Santa Cruz Portland Cement	.....	$1.00 qr.	Dec. 24	Jan. 1
Sterling Salt	Common	$.50 qr.	Dec. 24	Jan. 1
Superior Portland Cement	Class A	$.27½ M	Dec. 23	Jan. 1
United States Gypsum	Preferred	1¾% qr.	Dec. 14	Dec. 30
United States Gypsum	Common	$.40 qr.	Dec. 14	Jan. 1
Warner Co	1st Pfd.	$1.75 qr.	Dec. 14	Jan. 1
Warner Co	Common	$.50 qr.	Dec. 30	Jan. 15
Worcester Salt Co	Common	1¼% qr.	Dec. 24	Dec. 29

Lower United States Gypsum Net Profit Likely

The net income of United States Gypsum Co. for the year ending December 31, 1929, probably will show another decrease from the preceding year. Net income probably will be between five and six dollars a share on the average of about 850,000 shares of common stock outstanding during the year, against $7.22 a share on 760,346 shares in 1928.

Net for the third quarter ended September 30 was about the same as or slightly higher than for the previous two quarters. Higher prices obtained for the company's products during the third quarter were offset somewhat by the tapering off in building activity. For the six months ended June 30, the company reported net income of $2,329,244 or $2.70 a share on 765,027 common shares, against $3,334,487 or $4.42 a share on 691,502 shares in the similar period of 1928, after preferred dividend requirements.

United States Gypsum's net income has declined since 1925, as shown by the following table:

	Net Income	Per Share	No. Share
1928	$6,031,635	$ 7.22	$760,436
1927	7,538,508	10.10	691,198
1926	8,375,747	11.35	687,875
1925	8,414,117	15.45	506,915

Decline in net income in 1926 was due chiefly to the lessening of building activity, but subsequent decreases were caused by price cutting within the gypsum industry. This price cutting situation was settled on favorable terms about May 1, and since then higher prices have been obtained for gypsum products.

The outstanding common stock was increased from 506,915 shares on December 31, 1925, to approximately 687,875 shares. As a result the amount earned per share showed a sharper decline than did net income.

Over $15,000,000 has been spent recently on improvements to existing facilities and in providing new plants and distributing centers located at advantageous points. New products have also been developed to meet the specified requirements of the company's customers.

Johns Manville

The past year has been marked by a wide expansion in Manville's line of output. The exclusive right to manufacture in the United States and Canada transite seamless pipe, made of asbestos and portland cement, was secured some months ago. Previous to that a contract was closed with the Florida Travertine Corporation, whereby Manville would be the exclusive agent for travertine, a building stone heretofore supplied mainly by Italian quarries. Celite Company of California was also recently acquired. This company has annual sales of around $4,000,000 and owns a deposit of diatomaceous earth.

Foreign business shows gains, and it is the company's policy to intensify its efforts along these lines. Accordingly the Johns-Manville International Corporation was formed several months ago with a capitalization of $1,000,000 to act as a holding company for all foreign subsidiaries with the exception of Canada. A German subsidiary was recently formed and its entire capital stock is owned by the corporation. Several other foreign companies have been acquired during the past year.

Diversification of the Johns-Manville organization has permitted the company to make a comparatively good showing in 1929—a period when construction of buildings was not as large as had been anticipated. A new high record should be established in 1929 in both sales and earnings. Every indication is given to expect that net earnings will be about $10 a share on the 750,000 common shares while sales should run in excess of $60,000,000. In 1928 on sales of $47,945,559, net income of $5,589,398, or $6.75 a common share after preferred dividends, was realized. While part of the company's excellent showing can be attributed to the inclusion of the business of Celite Co., Banner Rock Products Co., and Weaver-Henry Co., the major portion is due to the growing demand for the company's established lines.

During the past several years, Manville's earnings have been showing consistent improvement, the gains recently becoming more marked. The speed with which earning power is being built up is best visualized by pointing out that the net of $5,522,396 for the first nine months of 1929 was only $67,002, or slightly more than 1 per cent below earnings for the entire year 1928, while exceeding 1927's net of $4,108,159 by $1,414,237.

Pacific Portland Cement

This company's earnings are apparently running at a favorable rate since it declared and paid a special dividend of $2.60 per share on the common stock, payable December 18, to holders of record December 14. This is the first dividend this company has declared since its consolidation with the Mission Cement Co. No definite earnings reports are available on this year's progress.

Alpha Portland Cement

Alpha Portland Cement Company, whose common stock was recently listed on the New York Stock Exchange, showed earnings of $2.60 a share on the 711,000 shares of common stock for the twelve months ended September 30, a sharp decline from the previous year. Dividend payments are made on the common stock at the rate of $3 annually and it is doubtful if the company can show earnings sufficient to cover the dividend for the year ending December 31. About $2.60 a share is the estimated amount which will be earned in 1929. Because of this probability a reduction in the present dividend rate is expected. The company is in good financial condition with cash and its equivalent amounting to nearly $7,000,000. The ratio of current assets to current liabilities was better than seven to one.

Raybestos-Manhattan

Earnings of Raybestos-Manhattan, Inc., showed a gain of 47½ per cent for the nine months to September 30, 1929, over the corresponding period of 1928, equaling $4.60 a share on the common stock. It has been stated officially that orders on hand permitted continued capacity operations for the balance of the year which should result in earnings of about $6 a share for the entire year.

Calaveras Cement

This moderate-sized California portland cement producer reported earnings for the first nine months of 1929. The company's net after depreciation, depletion and taxes was $416,564, equal to $19 on the 21,915 shares of preferred stock outstanding and $2.43 on 125,078 shares of common stock. This compares with earnings of $3.90 per share on the common for the full year 1928 whereas, in 1927, net income was equal to only $4.93 on the preferred shares.

Texas Gulf Sulphur

From present indications the past year will prove a record breaker for Texas Gulf Sulphur Co. It is officially estimated that profits of $15,600,000 was realized from operations, equivalent to over $6 a share on the 2,540,000 capital shares outstanding. This would compare with previous record net of the past year of $14,517,619 or $5.72 a share. October's profits were $1,420,595 and November's results were the highest for any month in the company's history.

LEGAL INFORMATION FOR OPERATORS

Workman Entitled to Total Disability Compensation

Generally speaking, under the Workmen's Compensation Laws an injured employee is entitled to total disability compensation if the injury prevents him from carrying on his regular occupation, although the evidence shows that he may perform another and different kind of work.

For illustration, in Crow v. Raymond Concrete Co., 123 So. 413, it was disclosed that a workman, while performing manual labor, fell and seriously injured himself.

Soon afterward he consulted a physician who removed foreign substances from one eye, and treated a swelling on his side.

Later the employe sued to recover compensation based upon development of a hernia. The lower Court awarded compensation based upon permanent total disability. The employer appealed to the higher Court contending that the workman was able to perform some kinds of work, not including manual labor. However, the Court upheld the lower Court's decision, and said:

"The evidence shows that plaintiff's (employee's) condition is the direct result of his injury received. . . . The indication is that it will endure for a long time, and the evidence does not indicate when it will be otherwise than as existed at the time of the trial. The evidence justifies the inference that manual labor is the only kind which plaintiff is capable of performing. . . . The evidence shows that plaintiff is entitled to compensation as a permanent total disability to do work of any reasonable character."

The Law of Taxation

Since, in many instances, contracts of sale contain clauses obligating purchasers to pay intrastate or other taxes, accruing after the sale is completed, it is important to observe the established law on this subject.

In the leading case of People v. Bacon, 90 N. E. 686, the higher court held that merchandise shipped from one state to another and which, while passing through a state, is removed from the cars by the owner for the mere temporary purpose of inspecting, weighing, cleaning, drying, grading, or mixing, is *not* actually in transit, but has a situs in such state which results in it being subject to taxation there. This Court said:

"In construing and enforcing the interstate commerce clause of the Federal Constitution, the rule has been established by the United States Supreme Court that property actually in transit from one state to another is exempt from local taxation; but, if such property be stored for an indefinite time during such transit *for other than natural causes or lack of facilities for immediate transportation*, it may be lawfully assessed by local authorities."

On the other hand, the mere fact that merchandise is shipped through a state and stopped by the carrier for transfer to another railroad freight station does not result in this state having legal right to subject the goods to taxation.

Another well established law is that merchandise being shipped from one state to another is not subject to taxation by a state in which the goods are caused to remain by an unavoidable cause. Therefore, the principle of the law is settled that a state may tax goods being shipped through the state if for any reason the merchandise is *intentionally* detained there.

Liability of Employer for Acts of Employee

Heavy damages are allowable for certain negligent acts of employees. In fact, during 1929 the various courts held that an employer always is liable in damages for any injurious act negligently performed by an employee within the scope of the employment.

For example, an employer is liable for all acts of a manager within the scope of the business he is managing. A common employee, however, is a special agent who is authorized to perform only special duties and, therefore, the employer is not liable for acts of a common employee outside the purview of his regular work. Moreover, an employer never is liable for injuries resulting from acts of a common employee in disobedience of his employer's instructions.

Another important point of the law decided by the 1929 courts is that an employee is personally liable for certain injurious or damaging acts.

It has been held that an employee is personally liable for contracts made for his employer (1) where he makes a false statement or representation of his authority; (2) where he does an act believing he has authority, but actually has none; (3) where he acts on authority from his employer and does an unlawful act; and (4) where he assumes responsibility.

In other words, there are many circumstances under which an employee is personally liable for performing an act damaging to his employer or which is injurious to the latter's customer. The legal reason an employee is personally liable when he exceeds his authority is because the other party to the contract is deprived of any remedy except from the employee, since there is no valid contract between the employer and the other party.

For example, an employer is not bound by the terms of a contract made by his employee on the former's letter-heads, unless the employee was authorized to make contracts, but the latter is liable.

In the recent case of Riverside Co. v. O. C. Keckley Co., 32 F. (2d) 23, it was disclosed that an employee wrote a letter on the company's letter-head and signed it as follows:

"Yours truly, Nipigon Mills, Ltd., J. A. Bethke."

Later when the recipient of the letter sued because the firm refused to fulfill the contract the Court held the same not binding because Bethke had not been authorized to write it. This Court said:

"While 'Nipigon Mills, Ltd., J. A. Bethke,' appears at the foot of the letter, *it is Bethke's letter.* He testified that he wrote it, it is written on the letter-head of the company, *and there is no evidence that he in any way represented* or had authority to represent the company."

Another very common source of litigation arises from unauthorized statements and guarantees made by representatives, such as salesmen.

A salesman's sole *implied* legal authority is to accept an order and send it to his employer for approval, and if the latter is not satisfied with the offer submitted, he may reject the proposal or simply refuse to deliver the goods after sending the buyer notification. And conversely the buyer *always* is privileged to send his cancellation of the order any time before the salesman's employer acknowledges the same.

In other words, the law is well established that a salesman is merely a special agent, whose implied authority extends no further than to solicit a buyer's orders or *proposals* to purchase merchandise.

Therefore, if the seller desires he may without liability reject the orders

sent in by the salesman, providing the rejection is made promptly upon receipt of the order. Moreover, this is true although both the buyer and the salesman signed the order intending to complete a valid contract of sale.

Liability of Warehouseman for Damage to Stored Merchandise

Since numerous manufacturers and dealers in non-metallic products store merchandise for distribution purposes, it is important to understand the law with respect to the liability of a warehouseman for loss or injury to the goods.

Generally, a warehouseman is liable for the loss or damage to stored goods, *only* where it is shown to the satisfaction of the court that the injury occurred as a result of negligence on the part of the warehouseman or his employees.

Moreover, a warehouseman is liable for loss or injury to stored merchandise only where it is proved that he or his employees failed to exercise a degree of care, such as would have been used by the average prudent person, to safeguard the property in his care.

An illustration of the strict requirements of the law regarding the care demanded of warehousemen is found in Minerva Co. v. Cameron Co., 15 S. W. (2d) 62. It was disclosed that a night watchman discovered a fire in a warehouse which was not equipped with automatic fire sprinkler system. The night watchman gave the alarm, but the firemen were unable to respond in time to prevent loss of the non-metallic merchandise stored therein.

The lower Court held the owner not entitled to recover the value of the stored goods, but the higher Court reversed this verdict, saying:

"The evidence was sufficient of actionable negligence in the failure to install an automatic fire sprinkler."

Therefore, it is quite apparent that a warehouseman is liable in damages for injury to stored goods where the same is occasioned by his failure to equip the warehouse with modern appliances. The same law is applicable where a theft is accomplished by reason of the warehouseman's negligence to employ a competent watchman. Also, he is liable for any loss resulting from negligence of his employees.

Distinguishing Common Carrier's Liability

Generally speaking, a common carrier is liable for *all* loss or shortage of shipped merchandise resulting from its own negligence, and against *all other loss, shortage or damages,* except such as may be caused by the *act of God, a public enemy of the United States, the act of the shipper, or the inherent nature of the goods.*

However, the recent case of Coos Co. v. American Railway Express Co., 277 Pac. 107, is unusually important because a shipper was held not entitled to recover full value for destroyed merchandise because he signed a receipt stating that, "in consideration of the rate charged for carrying said property, which is based upon an agreed valuation of not exceeding fifty dollars, the shipper agrees that the company shall not be liable in any event for more than fifty dollars for any shipment."

The Court held that this contract limited the carrier's liability to not more than fifty dollars.

On the other hand, no contract of this nature is valid by which a common carrier limits its liability unless the regular freight rate is *reduced* in consideration of the shipper limiting the carrier's liability. Therefore, read very carefully your receipts for consigned merchandise.

Duty of Telegraph Company to Deliver Message

Since numerous controversies arise with telegraph companies which transmit incorrect messages it is well to know that a company in this business is not liable in damages for failure to correctly transmit an ordinary message. The various courts have adhered to this law, although the sender or recipient of the message may have sustained heavy financial losses as a result of the error.

However, it is interesting to observe that in the case of Lutesville Sand and Gravel Co. v. Western Union, 296 S. W. 252, the higher Court held a telegraph company liable for *failure* to deliver a message.

In this case a purchaser of gravel, who received daily shipments, dispatched a telegram to the gravel company stating "Stop shipment material until further notice."

The message arrived at the telegraph office in the city in which the gravel company was located, but through negligence it remained undelivered. The gravel company continued to make the usual shipments daily. Suit was filed against the telegraph company for damages, and the Court held the latter liable, saying:

"We are quite familiar with the doctrine generally accepted in this country that one who takes the initiative in using the telegraph as a medium of communication makes the telegraph company his agent for the purpose of communicating his message. This rule is based upon the theory that, if either sender or sendee must bear the loss occasioned by the errors or negligence of the telegraph company, it is more equitable and just that the sender, who has selected the telegraph as a means of communication, should be the one to suffer. . . . Ordinarily, where the negligence of a telegraph company results in goods being shipped and sold on a certain market, when, but for such negligence, they would not have been shipped at all, the proper measure of damages is the difference between the price realized by the sale and the value of the goods at the place of shipment, plus the cost of handling and freight."

From this explanation by the Court it is apparent that a person who sends a message may be liable to the addressee for any mistake on the part of the telegraph company and which results to the addressee's damage. In other words, a person who sends a message by wire employs the company as his agent or employee to transmit the information, and he is liable for its negligent act to practically the same extent as if the act causing the damage was accomplished by an employee at the sender's own plant.

Marquette Cement Purchases New Towing Tug

The Marquette Cement Manufacturing Co. is soon to have a new twin-screw river tug for use in towing self-unloading barges carrying bulk cement from the Marquette plant at Cape Girardeau, Mo., to storage and packing plants at St. Louis and Memphis, Tenn. The tug is being built by the Marietta Manufacturing Co. of Pt. Pleasant, W. Va., and is to be 120 ft. long, with 26-ft. beam and a mean draft of 5 feet. Two Atlas Imperial engines of 225 h.p. will drive the twin 6-ft propellers.

The Idaho Portland Cement Company's Shovels

In that part of PIT AND QUARRY'S annual cement-industry review which dealt with the plant of the Idaho Portland Cement Company at Inkom, Idaho, there appeared a statement which was not correct. This statement, which occurred on page 88 of the December 18 issue, read as follows: "A Speeder ½-cu. yd. gasoline shovel and a General ¾-cu. yd. shovel load the material . . . " The error lay in the description of the General shovel, which, according to more recent information, has a capacity of only a little more than ½ cu. yd.

TRAFFIC NEWS AND COMMENT

Cement Rates From Laramie, Wyo., to Southwest

Southwestern Freight Bureau Docket 18,923 covers request from a shipper for new rates on cement from Laramie, Wyo., to various destinations in Texas, Oklahoma and Louisiana.

It is claimed that the proposed rates, shown below, are based on Scale 4 of the Interstate Commerce Commission Docket 8,182.

TO	
Texaline, Tex	27c
Dalhart, Tex	28
Amarillo, Tex	30
Chillicothe, Tex	35½
Wichita Falls, Tex	37½
Bowie, Tex	35½
Fort Worth, Tex	38
Waco, Tex	40
Austin, Tex	43
San Antonio, Tex	44½
Port Aransas, Tex	48½
Dallas, Tex	38½
Houston, Tex	44
Beaumont, Tex	45½
Galveston, Tex	45½
New Orleans, La	51
Shreveport, La	43
Oklahoma City, Okla	35½
Tulsa, Okla	38½

Pulverized Limestone

Shippers have asked the Central Freight Association carriers to establish a new line of rates on crushed, ground or pulverized limestone, in barrels, boxes or sacks, or in bulk, from Gibsonville and Woodville, Ohio, to various destinations in Wisconsin and Minnesota. The matter is covered by C. F. A. Docket 23,349.

The rates sought by the shippers are as follows:

TO	
Duluth, Minn	26c
Fond du Lac, Wis	23
Green Bay, Wis	17½
Madison, Wis	23
Oshkosh, Wis	23
Portage, Wis	23
St. Paul, Minn	26
Wausau, Wis	23
Winona, Minn	23

Agriculture Lime

The Ohio Railroads are giving consideration to establishing new rates on Agriculture Lime to Mahoning, Phalanx, Leavittsburg, Braceville, Windham and Freedom, Ohio, from the points indicated below. The rates now receiving consideration under Docket 22,370 are as follows:

FROM	
Carey, Ohio	11c
Cold Springs, Ohio	12½
Delaware, Ohio	11
Durbin, Ohio	12½
Marble Cliff, Ohio	11½
Marion, Ohio	11
McVittys, Ohio	11
Owens, Ohio	11
Pemberville, Ohio	11
Scioto, Ohio	11
White Sulphur, Ohio	11

Cement From Martinsburg, W. Va., Eastward

Eastern Trunk Line Association Docket 22,323 contains a proposal by shipper to readjust rates on cement from Martinsburg, W. Va., to various stations in Maryland and Pennsylvania.

It is the shipper's contention that the following rates are in line with those on cement from and to other points in the same general territory:

TO	
Baltimore, Md	12c
Evergreen, Md	12½
Notre Dame to Towson Heights, Md	13½
Oakleigh, Md	16
Lock Haven to Long Green, Md	16½
Hyde to Vale, Md	17½
Bel Air to Minefield, Md	18
Street to Pylesville, Md	19
Whiteford, Md., to Bridgeton, Pa	18
Bruce to Laurel, Pa	17½
Brogueville to Springvale, Pa	16½
Red Lion to Ore Valley, Pa	12½
East York, Pa	11

Sand and Gravel From Susquehanna, Pa.

The Eastern Trunk Line Association carriers, in their Docket 22,299, propose to make very substantial increases in the rates on sand and gravel from Susquehanna, Pa., to various stations in New York. It is their claim that the following rates should be established and that these rates are comparable with rates now in effect from Whitney Point, N. Y., to the same destinations.

TO	Proposed Rates	Present Rates
Horseheads, N. Y	$1.10	$1.35
Big Flats, N. Y	1.25	1.35
Corning, N. Y	1.25	1.35
Painted Post, N. Y	1.25	1.35
Coopers, N. Y	1.40	1.35
Curtis, N. Y	1.40	3.70
Campbell, N. Y	1.40	3.70
Savonia, N. Y	1.40	3.80
Bath, N. Y	1.40	3.90
Kanona, N. Y	1.40	3.90

Revision of Cement Rates From Ohio and Indiana Producing Points to Destinations in Wisconsin

The Central Freight Association Railroads in Docket 23,297 propose to adjust rates on cement from various producing points in Ohio, Michigan and Indiana to destinations in the State of Wisconsin.

Examples of the proposed rates are shown below:

TO	FROM Speed, Ind.	Limedale, Ind.	Mitchell, Ind.
Neenah	18½c	16c	18½c
Green Bay	19	17	18½
Antigo	20½	..	..
Ashland	23	..	23
Evansville	17	15½	17
Dodgeville	18½	16	18½
Elkhorn	17	14½	16
Monroe	17½	16	17
Wausau	20½	19½	20½
Marinette	20½	17½	19½
Waupaca	19½	17	19
Chippewa Falls	21	19½	20½
New Richmond	22	20½	22
Cameron	22	20½	21
LaCrosse	20½	18½	20½
Superior	24	22½	23
Waupaca	19½	17	..
Stevens Point	20½	17½	19½
Monticello	17½	16	17
Tomahawk	21	19	20½
	Osborn, Ohio	Cement City, Mich.	Silica, Ohio
Fond du Lac	18½	15½	17
Antigo	20½	17½	19
Marshfield	20½	17½	19
Portage	18½	16	17½
LaCrosse	20½	17½	19½
Superior	24	21	22½
Monroe	17½	16	17
Madison	17½	16	17
Dodgeville	18½	17	17½
Wisconsin Rapids	20½	17	19½
	Coldwater, Mich.	Bay Bridge, Ohio	Quincy, Mich.
Fond du Lac	16	17	16
Green Bay	16	17½	16
Manitowoc	15½	17	16
Antigo	17½	19½	17½
Marshfield	17½	19½	17½
Portage	16	18½	16
LaCrosse	17½	20½	17½
Superior	21	23	21
Monroe	15½	17½	15½
Madison	15½	17½	15½
Wisconsin Rapids	17½	19	17½
Appleton	16	17½	16
			Stroh, Ind.
Fond du Lac			15½
Green Bay			16
Manitowoc			15½
Antigo			17½
Portage			16
LaCrosse			17½
Superior			21
Monroe			15½
Madison			15½
Wisconsin Rapids			17½

LATEST NEWS FLASHES

Speeder Machinery to Exhibit At Road Show

The Speeder Machinery Corporation, Cedar Rapids, Iowa, manufacturer of full revolving, fully convertible gasoline and electric one-half yard shovels, plans an unannounced exhibit at the National Road Show that promises to attract wide attention in the power shovel field, as well as the exhibit of their B-3 one-half yard shovel with several improvements.

The Speeder Corporation hotel headquarters will be at the Knickerbocker Hotel and the exhibit will be located on the main floor of the Auditorium, Space No. 312, which is located directly in front of the stage. Those in attendance will be T. M. Deal, sales manager; H. W. Parsons, assistant sales manager; Edgar McNall, advertising manager; L. A. Bartlett, district sales manager; B. W. Olin, district sales manager; W. H. Boyd, district sales manager; H. J. Parcell, factory erector. The Speeder Corporation has chartered a special pullman for the accommodation of dealers, owners and representatives in returning to the factory after the show.

Butler Bin at Road Show

The Butler Bin Company of Waukesha, Wisconsin, has been awarded space No. 231 on the main floor of the Convention Hall at Atlantic City, where it will have a very interesting exhibit. This layout will include a 40-cu. yd. contractors bin divided into three compartments and equipped with the latest type weighing hopper. This hopper has been designed particularly to meet the demands for handling sand and two sizes of graded rock. It is equipped with a graduated three-beam scale, the hopper itself having three compartments to accommodate the three different sizes of aggregates. This bin may be moved from one setup to another as a unit without the necessity of removing the scales or weighing hopper and is so arranged that, at a nominal expense, solid rubber tired truck wheels and a frame on which the bin may rest can be added and the entire outfit hooked on to the rear of a truck to facilitate rapid and easy transportation.

The balance of the exhibit will include a cement weighing hopper, a quick adjustable volumetric proportioning hopper, a small model of a V-40 cubic yard two compartment bin carrying the latest type of volumetric proportioning hoppers, a small model of a weight proportioning hopper using removable weights, a roller gate and a duplex gate.

New literature devoted to commercial concrete plants of both the stationary and transit mixed types will be available for distribution as well as several new bulletins, circulars featuring recently developed equipment. Interesting motion pictures taken in the field and featuring Butler equipment will be shown. The exhibit will be in charge of M. R. Butler, A. R. Morton, C. E. Riblet and M. Kelly.

Barrett-Cravens Purchased By Walker Vehicle Co.

As a recent development of definite interest and importance to the Materials Handling Equipment field is the linking together, in ownership and management, Barrett-Cravens Company with Walker Vehicle Company, Chicago, and Automatic Transportation Company, Inc., Buffalo.

Walker Vehicle Company (which is an Insull Company, being a subsidiary of Commonwealth Edison Company) has purchased the capital stock of Barrett-Cravens Company, manufacturers of lift-trucks, lift-truck platforms, portable elevators and structural steel storage racks.

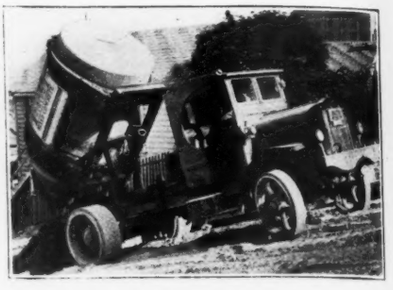
The Automatic Company is the pioneer manufacturer of electric industrial trucks and tractors, while Walker Vehicle Company is one of the oldest motor truck manufacturers, having been in business since 1903, manufacturing a full line of electric trucks for street use.

The pooling of the experience and talent developed by these three companies should assist in the development of the electric and hand lift-truck field.

Transit-Mixed Concrete Is Hauled by 14 Trucks

More than 12,000 cu. yd. of transit-mixed concrete is being delivered monthly by The Golden Gate Atlas Materials Company of San Francisco.

The latest contract to be accepted by this company is from the Shell Oil Co. for 20,000 cu. yd. to be used in the construction of a new 30-story office building in San Francisco. Fourteen White trucks are being used in this interesting operation, averaging 60 miles a day with an average gross load of 34,000 lb.



One of the 14 trucks

The company is a combination of the Golden Gate Materials Company and the Atlas Mortar Company, the merger having been consummated in 1926. In August, 1928, the company completed plans and preliminary work and started delivering transit-mixed concrete. Raw materials are received at the plant in rail cars and deposited into large bins, located beneath the level of the street. From here the materials are carried by conveyor belt to a bucket elevator which lifts them to a distributor 92 ft. above, where they were discharged into bins.

The materials are drawn into a hopper where water is added, and then, after a short mix, are dumped into the mixer bodies ready for delivery. Four cu. yd. of the mixture can be carried and the mixer is kept in operation throughout the entire trip. This wet mixture can be transported for about three hours without harm.

Recently the company accepted a contract to furnish Transit mix for a paving job on Wisconsin street in San Francisco. In view of the fact that the grade at this place is 20 per cent or more, it presented a difficult job for the motor equipment. Precaution was taken by having a tractor on the job to permit the trucks to back safely down the grade to the point where the load was to be dumped. At first the trucks were loaded with but 3 cu. yd. of concrete. Not only was it found that the tractor was not necessary but that the trucks would operate easily with a maximum load of four yards.

Having the material mixed in transit eliminates the installation of costly equipment on the job, the necessity of using the streets for storage of materials and insures a dependable mixture as specified with a steady flow of concrete at the hour when wanted, says L. F. de Saussure, superintendent of the plant.

Realizing that such an operation places a stamina test on motor equipment, Mr. de Saussure directs a careful supervision over the White Model 52's being used by the company. Three mechanics are employed and are charged with the responsibility of having the mixers and trucks in perfect condition at all times. All fourteen of the Whites have been in operation several years and are operating at remarkably low cost.

Link-Belt Plans Exhibit At Sand and Gravel Show

Link-Belt Company, of Chicago and Philadelphia, will exhibit a complete line of equipment for handling, washing and screening sand, gravel and stone, at Booths No. 53 and 54 of the National Sand & Gravel Convention, on the mezzanine floor of the Peabody Hotel, Memphis, Tennessee. C. S. Huntington, H. L. Strube and A. K. Schifflin will be in attendance.

Marquette Cement Lets Contract for Diesel-driven Tug

A contract for a twin screw diesel river tug has been awarded to the Marietta Manufacturing Company of Point Pleasant, W. Va., by the Marquette Cement Manufacturing Company of Chicago, Illinois, from designs prepared by T. R. Tarn, Naval Architect of Pittsburgh, Penna. The contract price is said to be $135,000 and delivery is to be made in June of next year.

The dimensions of the tug are 120 ft. by 26 ft. by 7 ft. It will be powered with two Atlas-Imperial engines of 350 hp. each at 225 r.p.m. The stern of the tug is of the shallow tunnel type. The propellers have a diameter of six feet and the mean draft of the tug is five feet.

This tug will be used by the Marquette Cement Manufacturing Company to tow the self-unloading bulk cement barges recently placed in service at the Cape Girardeau plant on the Mississippi River, to its storage and sacking plants at St. Louis and Memphis.

Attention All Exhibitors

The American Road Builders' Association wishes to call attention to the fact that Saturday, January 11, 1930, is Manufacturers' and Distributors' day. On this day the Exposition will be opened only to manufacturers.

This plan was tried last year, but, due to the inclement weather and various difficulties in setting up the exhibits, it did not prove as successful as it could be if all the exhibits had been set up and the representatives in their booths. Therefore, it has been asked by the Equipment Distributors' Association to see that all exhibitors have representatives in their booths and, it is already one of the rules of the Exposition that all exhibits must be set up and ready on the morning of Saturday, January 11, 1930.

Manufacturers' and Distributors' day is one of the most important days at the convention, so it is urged that they cooperate to the fullest extent and arrange all details whereby the greatest possible good will be derived from this day.

Transit Mixers to Exhibit At Road Show

Transit Mixers, Inc., will occupy booth 652 containing approximately 612 sq. ft. of floor space. It plans to exhibit three models of its mixers, and it is possible that additional new models will be shown if satisfactory arrangements can be made.

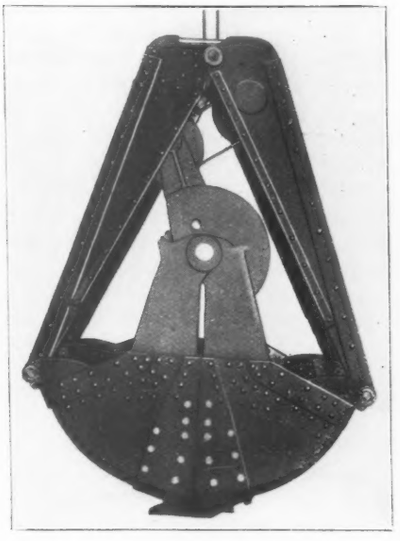
The Paris Transit Mixers in this exhibit will be new models containing improvements and refinements over older models. An adequate force of representatives will be on hand to furnish information with regard to its product. During the entire show, the exhibit will be in charge of Edwin F. Hill, Jr., sales manager. This company will maintain headquarters at the Traymore Hotel at Atlantic City, where space has been secured for conferences. Representatives will be available to furnish extended information covering the product and Transit system mixed concrete.

Exhibit Improved Buckets At Road Show

The G. H. Williams Co. will show a new Williams Champion excavator bucket at the Road Show at Atlantic City. Engineers have combined the lever-arm principle with multiple reeving of the closing line, and other improved features of construction which give this bucket exceptional rigidity, as well as greater penetrating power.

Narrow head construction has been accomplished by attaching one pair of corner bars to the rolled-steel head plate, instead of carrying them right up to the bearing pin. A much larger guide sheave is being used and the cable is guarded at the head by improved transverse rollers. The new excavator is manufactured in sizes from ¾-cu. yd. up.

The company will also show the newly-improved Double-Arch dragline bucket, in which the arch is built up of rolled steel, eliminating danger of breaking if the bucket is dropped against rocks. This sturdy bridge and the heavy lip form a rigid double arch, that prevents drawing in at the sides.



An improved excavator bucket

Castings of a special steel alloy strengthen the sides of this sturdy bucket and cut down the wear on side plates, when working in abrasive materials, to a minimum. Patented digging teeth of new and improved design add digging leverage.

An inspection of the complete new Williams line of clamshell and dragline buckets, in Booth 459 Exhibition Hall, will show higher working efficiency and greater strength and stamina than ever before.

Bay City to Exhibit At Road Show

Bay City Shovels, Inc., will occupy space 309 at the Road Show. The exhibit will feature Model R, full revolving convertible shovel of 26-ton weight and mounted on full crawlers; and Model K, full revolving, ½-cu. yd. capacity of 14½-ton weight. All of these machines are convertible into crane, dragline, skimmer, or trench hoe.

All of these machines were exhibited at the 1929 Road Show, and,

Full-revolving convertible shovel

while Bay City is not making changes in the capacity or general type of equipment, the machines to be exhibited at Atlantic City will all contain important refinements and improvements, which will be of interest. Models K and R may be powered with diesel engines in addition to gasoline or electric power on the 1930 models. The weight of these machines has been increased and, while there is no radical change in design, there are a number of minor changes along the line of refinements and improvements.

Donald B. MacNeal Operates New Storage Yard

On January 1, 1930, Donald B. MacNeal opened a new storage yard in Chicago and took possession of a piece of land located at 121st and Loomis Street. This property is served by the Chicago, Rock Island and Pacific railroad. There is one switch track on the property, but the company is laying several hundred feet of track with several switches.

Any one leaving the loop or business district of Chicago may go to the yard via the Illinois Central Electrified, taking thirty minutes.

This property is enclosed with a high board fence and there is an office building, together with large space under cover for repair work, latest tool rooms, and stock of new and used parts for almost any crane, dragline, or shovel. Someone is on the property giving day and night service at all times.

At the present location there are several cranes, draglines, shovels, as well as locomotive type equipment, and it is in a position to store equipment for competitors or contractors. An invitation is extended to all contractors to ship any equipment into the yard for storage purposes as it serves their interests.

Relay at Road Show

The Road Show will mark the first public appearance of the new Relay Truck Model 50D, manufactured by Relay Motors Corporation. This will be on display in Space 528 of the Exhibition Hall. The Relay Model S11 will also be on display. The 50D will be equipped with 3 yard dump body and hoist; the S11 with 1½ yard gravity dump body. During 1929 Relay has been conducting extensive research and experiment with trucks best adapted to the needs of the dump truck operator. The outcome of this study is the 50D, a truck designed to do a particular type of work at the lowest cost.

The 2½ times additional tractive power developed by Relay trucks in comparison with conventional equipment assures the operator that, no matter how hard or bad the going is, he has a chance to negotiate it. This added tractive power is a great advantage to the dump truck operator and to those who have charge of dump truck fleets, whose equipment must be kept in continuous service.

Furthermore, with the short turning radius of the 139½-in. wheelbase chassis and powerful 6-cylinder motor, the operator of dump truck equipment has a vehicle that meets his requirements most economically and satisfactorily.

To present clearly the Relay story, the Relay Motors Corporation has prepared a motion picture which will be shown to all visitors at the Relay exhibit. This picture shows clearly what takes place within the wheel when the truck encounters an obstruction. Action pictures will also be shown of Relay trucks in all types of service and the hearty reception and enthusiastic comment already given this film assures Road Show Visitors an interesting and instructive few minutes when watching it. W. E. Murphy, from the Home office, will be in charge of the Relay Exhibit. He will be assisted by the company's eastern representatives.

Link-Belt Plans Exhibit At Crushed Stone Show

Link-Belt Company, Philadelphia, Chicago, Indianapolis, will exhibit various devices of interest to crushed stone producers, in Booths No. 27 and 28, at the National Crushed Stone Show, Gibson Hotel, Cincinnati, January 20-22, 1930.

The Link-Belt Vibrating Screen, Anti-Friction Belt Conveyor Idlers, and enlarged photographs of actual installations will be featured.

Messrs. C. S. Huntington, H. L. Strube, A. K. Schifflin and W. E. Philips, will be in attendance.

Interesting literature will be available.

Trackson Will Exhibit At Road Show

The Trackson Company, Milwaukee, Wis., advises that it will have a number of surprises at the 1930 Road Show for everyone who is interested in highway, dirt moving and general construction methods and equipment. Four entirely new machines—the new Trackson Crawler for the 15-30 McCormick-Deering Tractor, Trackson Crawler Wheels, the Trackson Hoist and the new Trackson Shovel—will be introduced in the display which will

Tractor-mounted shovel

be located in Section 102, on the main floor. The appearance of these new machines will undoubtedly be of interest.

While the new crawler for the 15-30 McCormick-Deering is Trackson design, nevertheless it is a distinctive type of crawler and has a number of special features. It is designed for highway and general contracting work, and will also have a wide range of usefulness for other fields.

In producing the new crawler wheels, the company has had in mind particularly the needs of dirt moving contractors, loggers, oil field operators, cane growers and others who haul in very difficult ground conditions and who, therefore, need crawlers on their wagons as well as on their tractors. According to R. D. Houghton, manager of the crawler wheel department, these new wheels can readily be mounted on various types of wagons, and it will be the purpose to furnish them to the manufacturers of such equipment.

The new crawler wheels will be produced in four sizes, with 6-, 10-, 15-, and 20-ton load capacities, respectively. The 10- and 15-ton sizes will be of particular interest, since they can be used on wagons with from 5 to 10-yard capacities.

The hoist was designed by J. E. Dale, who is well known to the equipment industry as an authority on hoists and who has been associated with the company for some time. Mr. Dale, in connection with Trackson Engineers, has spent almost three years in designing, building and improving the hoist, and for the past eight months this machine has been subjected to the most rigid operating tests, so that it will make its debut at the Road Show as a perfected product, which has proved its ability to perform and stand up under all conditions. The hoist is of all-steel construction and has several new patented features which combine to make it an ideal hoisting equipment. It is designed for mounting either on Trackson crawlers or on wheel tractors.

The new Shovel is said to be the latest in excavating and material handling equipment and was built by the Trackson engineers after they had made a thorough study of the needs of contractors, industrial plants and others who dig and handle various kinds of materials. Its outstanding features are extraordinary strength of construction, a sharp cutting edge, simplicity of operation, interchangeability with Trackson bulldozer and crane, and extremely low overhead clearance.

The new shovel will be displayed at the Road Show mounted on a Trackson crawler-tractor. It may also be mounted on the wheel tractor, but the crawlers are recommended for work in soft, loose, or slippery ground.

In addition to these new machines, the company will exhibit several model L Tracksons, a model DH Trackson McCormick-Deering equipped with the Trackson bulldozer, a Trackson crane mounted on a McCormick-Deering wheel tractor, and several other pieces of equipment. The display in Section 102 will be in charge of L. E. Dauer, sales manager. Others in attendance will be W. H. Stiemke, vice-president and general manager, R. D. Houghton, R. G. Brunner, J. L. Hawes, and several other representatives.

Laval Sand to Dredge Big Sandy

The Laval Sand Company, Hinton, W. Va., has applied for a permit to dredge sand near Louisa, Ky., for two miles along Big Sandy river, and to construct one 8-in. and two 12-in. pipe lines, and one 12 ft. by 14-ft. concrete intake pump house in the Kanawha river.

Lannon Sand & Stone Opens Another Pit

The Lannon Sand and Stone Company, Menomonee Falls, Wis., is opening another pit on the Thomas McCarty farm west of its present plant.

To Build Feldspar Mill

The Consolidated Feldspar Company, H. P. Margerum, pres., Trenton, N. J., expects to build a mill at Kingman, Ariz., this summer. Plant will have capacity of 2,000 tons a month. Quarry will be at Stockton, Kingman P. O., Ariz.

United Concrete to Build Ready-Mixed Plant

The United Concrete Co., Edwin F. Hively, Jr., Gen. Mgr., will build a ready-mixed concrete plant at Girard Ave. and Maryland & Pennsylvania R. R., York, Pa. The plant will have a capacity of 600 cu. yd. daily and will be ready by March 1, 1930. A chain of similar operations is being planned.

Prest-O-Lite Company, Inc., At the Road Show

The Prest-O-Lite Company, Inc., is occupying booth 406 at the Road Show. A full line of Prest-O-Lite truck and tractor lighting equipment and carbic floodlights are the features of the exhibit. Other items of interest to road builders which are being shown include Prest-O-Lite small tank appliances, oxweld cutting and welding equipment and the Carbic Generator. H. H. Griffith of the New York Office will be in charge.

Ohio Power Shovel Exhibit At Road Show

The Ohio Power Shovel Company will exhibit in space 305 a complete LIMA "101" gasoline shovel. In the same booth, it will have a lower frame completely assembled showing its simplicity of design and construction. For those who will want to see a LIMA machine in actual digging, it will have a complete unit on the beach near the Auditorium. There will be in attendance at the exhibit all district managers and salesmen of the Ohio Power Shovel Company, as well as many of the company's authorized dealers.

Lime Plant Nearly Completed At Newberry, Florida

The Ocala Lime Rock Corporation, of Ocala, Fla., has about completed its plant on the Atlantic Coast Line Railroad, a few miles east of Newberry. The equipment for this plant is being brought from a dismantled plant near Kendrick, Fla., and includes two ⅞-yd. Erie steam shovels, a 24-in. by 60-in. roll crusher, and two 60-hp. horizontal type Bessemer oil engines. The plant will have a capacity of 2,000 tons of Florida lime rock per day of ten hours, an official of the corporation states.

Young Radiator Co. Exhibit At Road Show

The Young Radiator Company, manufacturer of industrial power unit truck and bus radiators, will exhibit its products at space 504, at the 1929 annual Road Builders Show and convention, January 13th to the 18th.

A number of new pieces of equipment, showing the development of diesel engine radiators and gas engine power unit equipment will be shown. Representatives attending will be F. M. Young, president; J. J. Hilt, sales manager; W. L. Walton, sales engineer, and D. A. Hisey, superintendent.

To Produce Calcium Nitrate

The American Mines Development Co., Col. Jas. Barnard, Banks, Idaho, is building a mill for grinding calcium nitrate deposits. The entire output of 50 carloads weekly will be used by a Portland, Ore., fertilizer manufacturer.

Southern Phosphate Awards Drying Plant Contract

The Southern Phosphate Co., Bartow, Fla. (subsidiary of Davison Chemical Company, Baltimore, Md.), which is erecting a rock drying plant at Bartow, awarded the structural steel contract to the Nashville Bridge Company, Nashville, Tenn.

Dixie Mineral to Produce Limerock Asphalt

The Dixie Mineral Corporation of Pennsylvania has leased the property of the Cherokee Rock Asphalt Company, Cherokee, Ala., from the purchasers, C. V. McCreight, R. L. Babcock, F. G. Lilo, and Wilson McCleery. The lease gives the company control of 20,000 acres. Production of limerock asphalt will begin within 90 days. J. T. Nealon will be manager. Milner Engineering Company, Sheffield, Ala., is surveying the proposed route for a six-mile railroad from the Cherokee plant to the quarry site.

Inland Lime Lets Contract

The Inland Lime and Stone Company has awarded the construction of the crushing, screening, conveying and loading units of the Manistique plant to Stephens-Adamson. The engineering work will begin at once and erection will begin as soon as weather conditions permit. The contract requires a complete plant September 1, 1930.

A New Polishing Material

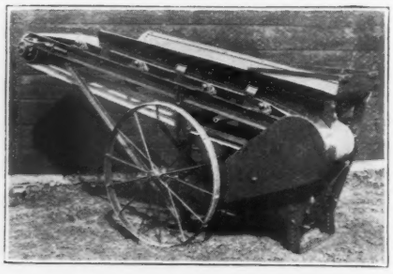
The Bunton Green Stone Company of West Chester, Pa., has recently developed Vermiculite, which it claims is a universal polisher. It will smooth and polish glass or the hardest metal.

NEW MACHINERY AND SUPPLIES

Portable Belt Loader Has Several New Features

The Ottumwa Box Car Loader Co. of Ottumwa, Ia., manufacturers of portable belt loaders, announces its new Model A portable handy belt loader, with several improvements and new features.

By use of special materials and improved design, the new model A has been materially reduced in weight. It can be very easily moved about and placed in or out of the car by one man. The main belt pulleys are of a new, light and strong design from electric welded, pressed steel. The main bearings are self-aligning S. K. F. double ball bearings which are enclosed in machined dust-proof boxings.



Portable belt box-car loader

Belt adjustments can be quickly made at three points. The belt is troughed and carried on new specially designed Timken roller bearing units. The entire machine is Alemite lubricated. The machine can be raised or lowered in a moment's time at either or both ends. The angle of elevation of the conveying belt can be widely varied so that it best suits the loading of different grades, weights and sizes of materials.

The new Model A is made in a standard length, using an 18-in. belt. Similar designed machines are also built using a 24-in. belt.

Segment Roll Pulverizer

The Brainard Segment Roll Pulverizer has features which are peculiar only to itself. It is made by the Brainard Pulverizer Co. of Chicago.

All of the generally accepted pulverizing principles are embodied in this machine, coarse material being broken down by impact and pressure, the rolling action and attrition finishing the grinding.

Either the dry or wet process can be used; if the former, air is employed in either a closed or an open circuit; if the latter, water is introduced with the product to be pulverized and the finished product is removed by the water current as fast as it is pulverized.

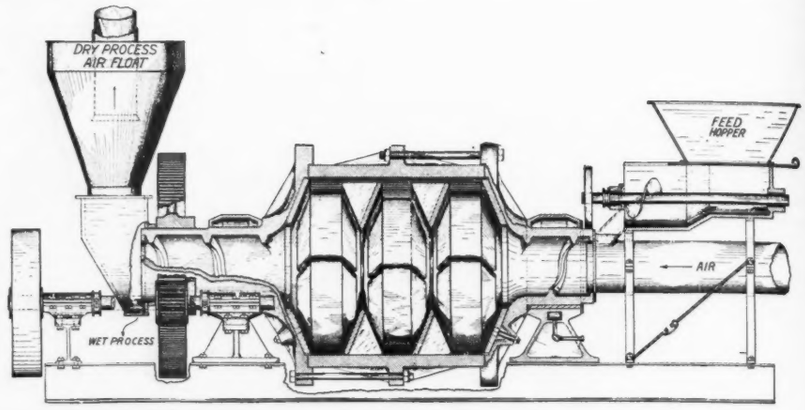


Fig. 1—Vertical longitudinal section of segment roll pulverizer

As this is a slow-speed machine no magnetic separator is needed and scrap iron can be safely introduced with the other material without serious results.

The finished product is uniform and of fine mesh if desired. The most abrasive material can be pulverized. There is no bearing inside the pulverizer, as the segments are loose members held in alignment by separating rings. Packing of the material is not apt to happen because of the violent and repeated action of the pulverizing elements.

Fig. 1 illustrates the machine in cross-section while Fig. 2 shows the pulverizing action of the segments, A, B, and C between themselves and against the distributing ring E, and the inner surface of the pulverizing chamber D. The weight of the segments varies from 300 to 700 lb. according to the material to be ground and the fineness required.

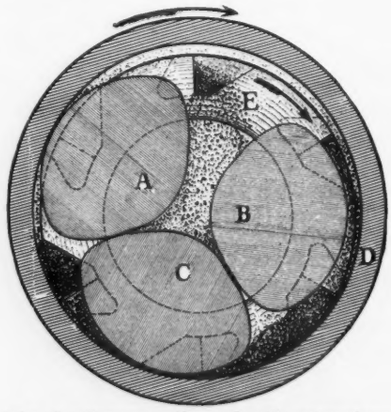
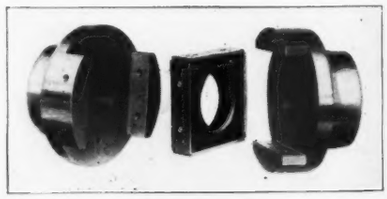


Fig. 2—Cross-section of roll pulverizer to indicate impact and grinding action

Among the materials which have been successfully pulverized are bentonite, cement, rock, clay, feldspar, fluorspar, fire clay, fuller's earth, graphite, gypsum, lime hydrate, limestone, magnesite, manganese ore, marble chips, sandstone, silica, and slate.

New Flexible Coupling Is of Novel Design

The American Flexible Coupling Company, Erie, Pa., is now marketing a rather novel design of shaft coupling. Kinematically the device is a variation of the well-known Oldham coupling in which a center member is constrained to slide across the face of one coupling flange on a line passing through the center, and at the same time is free to slide across the face of the second flange in a direction at right angles to the first.



Flexible coupling of novel design

The floating center member of the American Flexible Coupling is a square, hollow casting, with a hole in the center to provide clearance for the shaft ends. To the edges of this floating member are fastened replaceable bearing strips made from a hard, tough, non-metallic compound, such as is used in the manufacture of non-metallic pinions and gears.

The flange sections are identical and interchangeable, except for the bore diameters which are made to suit the shafts. The flange is cast in one piece with a hub of ample dimen-

sions. A wide groove is machined in the face of the flange, leaving two jaws between which the floating member slides and by which the torque is transmitted.

The coupling can be removed without the use of special tools by simply pulling the jaw flanges apart horizontally or sliding them past each other vertically. The non-metallic bearing strips can be replaced in a few minutes when necessary without disturbing the coupling or the connected shafts. The bearing strip screws are removed through holes in the jaws, when the old strips can be slipped out and new ones inserted.

Koehring Builds Dumptor

The Koehring Division of the National Equipment Corporation, Milwaukee, Wis., has added a new unit, the Dumptor, to its line of excavating and material-handling shovels, pull shovels, cranes and draglines.

New from the ground up, the Dumptor is distinctly a modern load-carrying unit, the first and only one of its kind on the market. The struck level capacity of the body is 5 yd., with an actual operating capacity of 6½ yd. and over.

With full multiplane traction for mobility and easy handling over most any kind of ground, with the ruggedness and liberal drawbar power of a tractor, and the bull dozing advantages of the dump body in discharge position, the Koehring Dumptor is a heavy duty unit embodying the profit-earning and dirt-handling features of truck, tractor and bull dozer.

One of the outstanding features in the unique design of the Dumptor is the power plant which consists of twin four cylinder engines. It provides a continuous flow of power to the multiplanes for traveling in most every variety of ground conditions, without steering clutches. This simplicity of design and ruggedness in the power transmission units make throttle steering a reality. The operator merely opens or closes either motor throttle depending on the direction in which he wishes to turn.

In addition to easy handling, the twin motors provide faster operation, greater flexibility and more power when needed for heavy going. On the job, these advantages mean that the Dumptor is able to move more pay dirt per day and per job at a lower cost than many dirt-handling methods now in use.

The body, which dumps from the front end, has a generous width of 86 in. and length of 129½ in. When tipped to dumping position by the hydraulic hoist, the wide body may be used as a powerful bull dozing blade.

Other features of the Dumptor are its low height of only 59 in. and its low bearing pressure of only 9.8 lb. per sq. in. with an 8-ton load. The low height permits easy clearance for a conveyor belt as well as for shovel, crane or dragline loading.

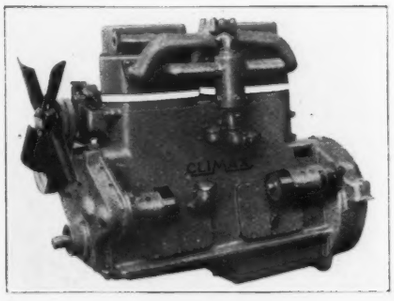
The Dumptor has four speeds forward: 1, 2, 3¾ and 5¼ miles per hour, and one reverse, 1⅛ miles per hour.

The Dumptor

Four New Engines Have Improved Features

Climax Engineering Company has brought out a new line of gas, gasoline and distillate burning engines that have outstanding performance characteristics. They include four engines of this new design entitled the Blue Streak series. The largest has 6 cylinders, while the other three are A-cylinder models. All of these have specially designed combustion chambers with overhead valves, large and efficient cooling systems, and combustion controlled to give high efficiency with corresponding increase in power output for any given displacement.

Valving, spark plug location and flame travel are controlled to secure low detonating values and unusually smooth operation with high power development. All four engines operate at 1,000 r.p.m. and can utilize either gasoline or distillate as fuel.



The new "Blue Streak"

Improvements in Gyratory Crushers

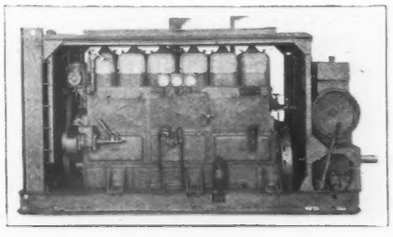
During the past year there has been a marked increase in the sale of gyratory crushers as compared to 1928, the greatest gain for Allis-Chalmers having been in the sale of the Newhouse type crusher. Improvements in the design of standard gyratory crushers have been made notably as follows:

The main frames of the complete line of McCully crushers have been redesigned, sections have been strengthened, the construction of the pins changed, and radial tie bolts have been added to further strengthen the bottom shells. An improved type enclosed dust seal has been developed, and a self-tightening clamp adjusting nut has been designed whereby the weight of the head and shaft are utilized to hold the adjusting nut firmly in the thread by means of an inverted wedge construction.

The larger sizes of McCully crushers are now provided with an improved type of suspension which places the reaction at a more advantageous point on the spider. To limit vertical movement of the shaft and head, the larger sizes of Superior crushers have been fitted with a thrust ring which is mounted on top of the spider hub.

New Small Diesel Engine Placed on Market

A three-cylinder full diesel engine, one of the smallest to be placed on the market, has recently been introduced by the Atlas Imperial Engine Co. The engine, designed for shovels,

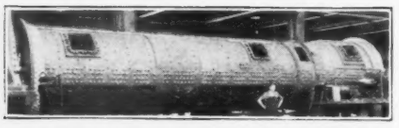


Industrial type diesel power unit

has a 5¾-in. bore and an 8-in. stroke. It uses the common rail type of injection. The company is to exhibit the engine, along with its 4-cylinder power unit and 6-cylinder Industrial type diesel engine, at the Road Show at Atlantic City.

Cement Machinery Improved

In connection with Rotary kiln design, the enlarged calcination zone, the advantages of which were enu-



Three-compartment Compeb mill

merated in last year's Review, has been furnished on several kilns by Allis-Chalmers and, according to reports by the operators, the kilns provided with the enlarged calcination zone are producing a superior grade of clinker.

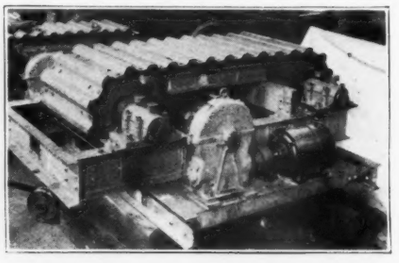
Rotary kiln driving mechanisms have been improved by the addition of another set of roller bearings, which now make this unit an all grease lubricated design. The first shaft from the high speed end of this mechanism has been mounted on roller bearings for some time.

There has been a marked increase in the sale of rotary dryers, and one of the most notable advances in rotary design is exemplified in a 6-ft. by 48-ft. direct heat oil fired dryer manufactured for the phosphate industry in Florida. This dryer was equipped throughout with roller bearings, the carrying mechanisms as well as the driving mechanisms being fitted with anti-friction type of bearings.

The success of the Compeb mill division head with peripheral screen and return scoops has been fully demonstrated on the new mills now in operation. Several existing mills are now being fitted with this same type of outside screen and return scoops.

The division head with peripheral screen and return scoops has been simplified by keeping the rejection return scoops outside of the housing, the material being collected for introduction to the scoops by means of an annular shaped pocket constructed at the end of the screen and revolving with the mill and scoops.

The latest Compeb mill shell design calls for the construction of single



Apron feeder ratchet-driven through speed reducer

diameter shells, one plate for the entire length, four to the circle. For two diameter shells the enlarged diameter and taper section are combined longitudinally in one plate, four to the circle. The following sizes of concaves are now being made of forged steel as well as cast iron:

1¼-in. Concavex.
⅞-in. Concavex.
¾-in. Concavex.

The volume of forged steel concavex business has increased so greatly that additional equipment has been added to our facilities for manufacturing this high efficient long wearing patented grinding media.

COMING EVENTS

Jan. 11-18, 1930. Atlantic City, N. J. Annual convention and show, American Road Builders' Association. Chas. M. Upham, secretary-director, 914 National Press Bldg., Washington, D. C.

Jan. 12-13, 1930 Atlantic City, N. J. Meeting, Associated Equipment Distributors, at the Marlborough-Blenheim Hotel. A. C. Blaisdell, secretary, Cincinnati, O.

Jan. 14, 1930. Washington, D. C. General conference of feldspar producers, distributors, and uses on standardization of grades, in East Building, U. S. Bureau of Standards. Harry H. Steidle, same address.

Jan. 20-23, 1930. Cincinnati, O. Annual convention and Manufacturers' Division Exposition, National Crushed-Stone Association, at Hotel Gibson. J. R. Boyd, secretary, Merchandise Bldg., 14th and S Sts., N. W., Washington, D. C.

Jan. 22, 1930. Birmingham, Ala. Portland Cement Association regional safety meeting, at Tutweiler Hotel. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

Jan. 28-30, 1930. Memphis, Tenn. Annual convention and Manufacturers' Division Exposition, National Sand & Gravel Association, at the Peabody Hotel. V. P. Ahearn, executive secretary, Munsey Bldg., Washington, D. C.

Jan. 29-30, 1930. Milwaukee, Wis. Annual convention, Wisconsin Concrete Products Association, at Hotel Plankinton.

Feb. 4-6, 1930. New York, N. Y. Annual meeting Sand-Lime Brick Association, at Pennsylvania Hotel. Ellen Knight, secretary, Saginaw, Mich.

Feb. 4, 1930. Dallas, Tex. Portland Cement Association regional safety meeting, at Baker Hotel. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

Feb. 11-13, 1930. New Orleans, La. Annual meeting, American Concrete Institute, at the Roosevelt Hotel.

Feb. 11, 1930. Cincinnati, O. Portland Cement Association regional safety meeting, at Hotel Gibson. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

Feb. 16-20, 1930. Toronto, Can. Thirty-second annual meeting, American Ceramic Society at Hotel Royal York. Gordon C. Keith, secretary-treasurer, 49 Turner Road, Toronto 10, Canada.

Feb. 25-28, 1930. Wichita, Kan. Fifth annual Southwest Road Show and School at the Coliseum. Secretary, P. O. Box 1043, Wichita, Kan.

Feb. 25, 1930. St. Louis, Mo. Portland Cement Association regional safety meeting at

Mar. 3-5, 1930. Chicago. National Management Congress, at Stevens Hotel. G. E. Pfisterer, manager, 308 W. Washington St., Chicago.

Mar. 3-7, 1930. Chicago. Industrial Equipment Exposition at Stevens Hotel. G. E. Pfisterer, manager, 308 W. Washington St., Chicago.

Mar. 3-7, 1930. Chicago. National Industrial Exposition at the Stevens Hotel. George Pfisterer, secretary, 308 W. Randolph St., Chicago.

March 4, 1930. La Salle, Ill. Portland Cement Association regional safety meeting, at Hotel Kaskaskia. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

March 18, 1930. Des Moines, Ia. Portland Cement Association regional safety meeting, at Hotel Fort Des Moines. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

March 25, 1930. Kansas City, Mo. Portland Cement Association regional safety meeting, at Hotel Muehlebach. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

Apr. 5-9, 1930. New York, N. Y.; Hoboken, N. J.; Washington, D. C. Fiftieth anniversary meeting, American Society of Mechanical Engineers, at American Machinist offices in New York; Stevens Institute, Hoboken; U. S. Chamber of Commerce Bldg., Washington.

April 7-11, 1930. Atlanta, Ga. Annual meeting, American Chemical Society.

April 15, 1930. Albany, N. Y. Portland Cement Association regional safety meeting, at Hotel Ten Eyck. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

MANUFACTURERS' PUBLICATIONS

Each publication listed below contains information of interest to non-metallic mineral producers. Readers may obtain, without charge—except where a price may be stated—and without obligation, copies of any of these publications by writing directly to the manufacturers who publish them. Please mention PIT AND QUARRY *when making such requests.*

Bearings

Power Drive Equipment. 40 p., 84 ill. (Catalog 29-A, The Hill Clutch Machine & Foundry Co., Cleveland, O.) Describes and illustrates flood lubricated oil-film bearings for line-shaft application.

Boilers

C-E VM-Type Boiler. 8 p., 5 ill. (Bulletin BVM 1, Combustion Engineering Corp., New York, N. Y.) Illustrates and describes a bent-tube boiler. Table of dimensions and drawings showing the setting dimensions for the various sizes in which the boiler is built are given.

Buckets, Clamshell

Erie's New Multi-Power Clamshell Bucket. 8 p., 16 ill. (Erie Steel Construction Co., Erie, Pa.) Describes and illustrates a new clamshell bucket, listing specifications.

Compressors, Air

Type 30 Air Compressors. 12 p., 10 ill. (Ingersoll-Rand Co., New York, N. Y.) Describes and illustrates a new self-contained air compressor unit.

Compressors, Air and Gas

Air and Gas Compressors. 24 p., 34 ill. (Bulletin 700, Chicago Pneumatic Tool Co., New York, N. Y.) Describes, illustrates and gives construction details of horizontal-duplex power-driven compressors.

Couplings

American Flexible Couplings. 12 p., 10 ill. (Bulletin 101, The American Flexible Coupling Co., Erie, Pa.) Describes and illustrates flexible couplings manufactured by this company and illustrates their application and use.

Cranes

Crane Service News. 4 p., 25 ill. (Crane Service Association, Lorain, O.) Pictures the adaptation of cranes to unusual uses.

Crushers

Rock and Gravel Crushing Equipment. 36 p., 61 ill. (Bulletin 600, Gruendler Crusher and Pulverizer Co., St. Louis, Mo.) Describes and illustrates plant equipment and shows typical installations throughout the country.

Williams Catalog for the Crushed Stone, Cement, Lime and Allied Industries. 36 p., 78 ill. (Catalog 462, The Williams Patent Crusher and Pulverizer Co., St. Louis, Mo.) Describes and illustrates all types of crushers and pictures their operation in a number of plants.

Crushing Plant Efficiency Increased. 4 p., 4 ill. (Leaflet No. 2116, Allis-Chalmers Mfg. Co., Milwaukee, Wis.) Illustrates installations and cross-sections of Style "B" Newhouse crushers.

Engines, Diesel

M. W. M. Benz Diesel Engines. 24 p., 21 ill. (Bulletin 775, Chicago Pneumatic Tool Co., New York, N. Y.) Describes and illustrates, in general, as well as by detail, the diesel engines manufactured by this company.

Exciters

Induction Motor-Generator Sets. 2 p., 5 ill. (GEA-394A, General Electric Co., Schenectady, N. Y.) Describes and illustrates motor-generator sets for use in the excitation of synchronous motors.

Hoists

Robbins & Myers Electric Hoists. 16 p., 41 ill. (Bulletin 5031, Robbins & Myers, Inc., Springfield, O.) Describes and illustrates electric hoists of several types, together with diagrams and specifications.

Locomotives

Whitcomb Locomotives. (George D. Whitcomb Co., Rochelle, Ill.) A loose-leaf folder, profusely illustrated, describing a line of gasoline, oil and electric locomotives varying from 3 to 100 tons.

Plants, Sand and Gravel

Link-Belt Plants for Washing Sand and Gravel. 80 p., 102 ill. (Book No. 640, Link-Belt Co., Chicago, Ill.) Describes and illustrates sand and gravel plant equipment and shows installations in 50 prominent plants. Valuable data and charts included.

Pumps, Dredging

Morris Dredging Pumps. 16 p., 18 ill. (Bulletin 133, Morris Machine Works, Baldwinsville, N. Y.) Describes and illustrates various sizes of dredging pumps, together with performance ratings.

Screening

Universal Vibrating Screens. 32 p., 25 ill. (Universal Vibrating Screen Co., Racine, Wis.) Describes and illustrates various sizes of vibrating screens, showing assembly and installation methods.

Tractors

Caterpillar Power for Mines, Quarries and Clay Pits. 36 p., 77 ill. (Caterpillar Tractor Co., San Leandro, Calif.) Illustrates Caterpillar tractors doing unusual jobs in various locations.

Trucks, Motor

"Another Quarry Where Trucks Cut Costs." 1 p., 1 ill. (*The Mack Bulldog*, Vol. 7, No. 6. Mack Trucks, Inc., New York, N. Y.) Describes economies in trucking effected by a large crushed stone quarry in Pennsylvania.

NEW CORPORATIONS

Gypsum Co., % Corp. Trust Co., of Amer., Wilmington, Dela., $1,000,000.

Utah Gypsum Products Co., Levan, Utah. 100,000 shares com., 25c per share.

Hudson River Sand & Gravel Corp., % E. Herrmann, 307-5th Ave., New York City. 250 shares com.

C. E. Roberson Sand Co., C. E. Roberson, Coeburn, Va. To mine building and engine sand at Pine Mountain, Ky.

Crown Rock Co., % Howard D. Porter, Blymyer Bldg., Cincinnati, O. 2500 shares n.p.v.

Owyhee Calcite Products Co., Harry Butler, Ontario, Oregon. $200,000. Fred Lockey, M. P. Tonning. To produce calcite and limestone.

Acme Gravel & Construction Co., Inc., Jesse L. Alley, Indianapolis, Ind. 100 shares n.p.v. Herbert L. Alley, Robert B. Alley.

Allied Sand & Gravel Corp., John Twohy, Pres., Norfolk, Va. 1000 shares n.p.v. Sand and gravel dredging operation.

Commonwealth Sand Co., John K. Watton, Kittanning, Pa. $60,000. Frank R. Alter, Treas., Parnassus, Pa. Attorney, John McC. Kennedy, 1308 First Nat. Bank Bldg., Pittsburgh, Pa.

Vulcan Sand & Stone Co., A. J. Martin, Camp Street, Plainville, N. Y. $30,000. David F. Carton, Tuckahoe, N. Y. Plant at Tuckahoe; office at Plainville.

Wilson Sand & Gravel Corp., John R. Wilson, Pres., Westville, N. J. $50,000 pfd.; 1000 shares com. D. J. Shulman, Sec.

Olean Gravel Corp., H. R. Moran and Harry D. Shay, First Nat. Bank Bldg., Olean, N. Y. 1000 shares com. To operate at Machias Junction, N. Y.

Turner Marble & Granite Co., H. G. Turner, Box 54, Tampa, Fla. 100 shares n.p.v. H. W. Hesterly, A. R. Fox.

Temple Slag Co., John S. Hipple, Pres., Temple, Pa. $5,000. Gilbert M. Sawyer, Treas. To crush material from slag banks. Will later go into stone quarrying business.

Joplin Sand Co., W. M. Meyer, Pres., 1224 Roosevelt Ave., Joplin, Mo. $5,000. H. J. Roy, V. P. & Gen. Mgr.

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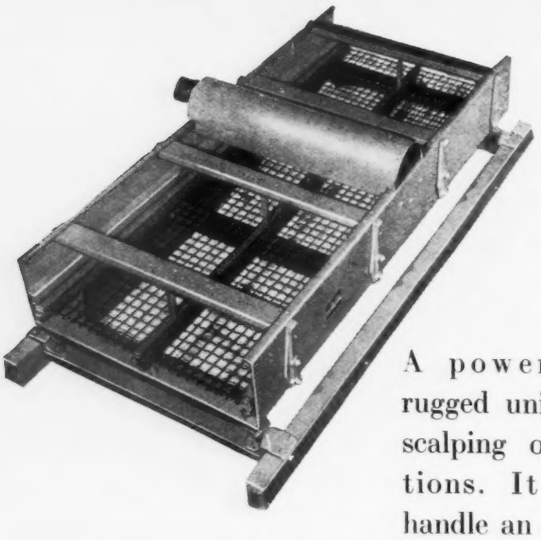

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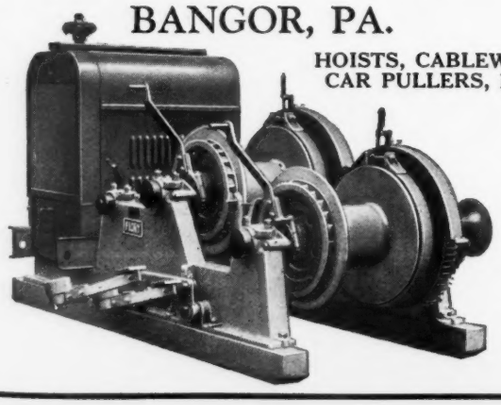
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